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PRESENT-DAY USE OF THE BROAD A IN EASTERN MASSACHUSETTS

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PURPOSE

THE purpose of this study was to ascertain current pronunciation in Eastern Massachusetts of a representative group of words that have been commonly referred to as the "ask-words," and also to ascertain current pronunciation of a small group of words that have not been referred to as the "ask-words" but which have been pronounced by some people in New England with the front vowel [æ], by others with the half-front vowel [a], and by others with the back vowel [ɑ].

PROCEDURE

First a list of sixty-three words was compiled including words in which the vowel is followed by a voiceless fricative, [f, θ, s], or by [m] or [n] plus a consonant, for example, *ask, chaff, path, grass, last, chance.* The list also included some words that have not been commonly referred to as the "ask-words," for example, *pajamas, drama, rather,* and some words that have been recorded in American dictionaries with the front vowel [æ], for example, *and, man, stand, land, fan, handy, panther, hat, package.* This last group of words, pronounced with the front vowel [æ], was included in the list and was purposely mixed with the entire list of words so that the person whose pronunciation was being recorded would not be confronted solely with a list of words that he or she might normally pronounce with the back vowel [ɑ] or with the half-front vowel [a]. A list of words was used in order to utilize a large number of words and in order to economize on the time of the person reading the words. The words were purposely not alphabetized, but were presented in a random order to the informants, as seen in Table I.

In order to record the pronunciation of a sufficient number of persons, it was necessary to use a large number of college students. These students were made available from several colleges and universities in and around Boston* and represent a good cross-section of the population. To balance this group, groups of children and groups of older adults were also used. In choosing persons whose pronunciation was to be recorded, the selection was made on the following basis: 1) Persons born in New

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TABLE I
WORD-SOUND PERCENTAGE PREFERENCE

Word	All Persons New England			Total		
	[ɑ]	[a]	[æ]	[ɑ]	[a]	[æ]
blast	3.74	11.23	85.03	4.84	8.06	87.10
chance	2.14	13.90	83.96	0	11.29	88.71
aunt	31.02	58.29	10.69	35.48	58.06	6.45
fancy	0	1.60	98.40	0	0	100.00
can't	10.70	34.22	55.08	14.52	43.55	41.94
cast	0	3.21	96.79	0	4.84	95.16
ask	19.78	19.25	60.97	30.65	19.35	50.00
nasty	0.53	1.60	97.87	0	1.61	98.39
branch	0.53	5.88	93.59	3.23	6.45	90.32
after	10.16	9.63	80.21	9.68	11.29	79.03
bask	2.14	6.95	90.91	1.61	11.29	87.10
advantage	0.53	1.60	97.87	0	0	100.00
answer	0.53	11.23	88.24	1.61	8.06	90.32
castle	0	1.07	98.93	0	0	100.00
bath	48.66	6.42	44.92	61.29	11.29	27.42
glance	2.67	10.16	87.17	0	12.90	87.10
and	0.53	1.07	98.40	1.61	0	98.39
mast	0.53	2.14	97.33	1.61	3.23	95.16
man	0	0.53	99.47	0	0	100.00
chaff	8.56	9.63	81.81	8.06	14.52	77.42
half	61.50	12.30	26.20	85.48	9.68	4.84
pass	7.49	4.81	87.70	11.29	3.23	85.48
grass	6.95	5.35	87.70	9.68	3.23	87.10
fast	3.21	4.81	91.98	1.61	3.23	95.16
gasp	0	1.60	98.40	0	1.61	98.39
last	17.65	10.70	71.65	30.65	9.68	59.68
laugh	73.26	5.35	21.39	90.32	3.23	6.45
stand	0.53	0.53	98.94	0	0	100.00
land	0.53	0	99.47	1.61	0	98.39
flask	1.60	6.95	91.45	1.61	9.68	88.71
staff	22.99	13.37	63.64	32.26	16.13	51.61
drama	24.60	15.51	59.89	25.81	9.68	64.52
master	3.74	7.49	88.77	4.84	8.06	87.10
basket	2.67	6.42	90.91	1.61	6.45	91.94
vast	3.74	6.95	89.31	6.45	4.84	88.71
task	1.60	5.35	93.05	0	6.45	93.55
France	2.67	12.30	85.03	3.23	9.68	87.10
rasp	0	3.74	96.26	0	4.84	95.16
past	5.88	5.88	88.24	4.84	4.84	90.32
Nebraska	4.28	11.23	84.49	6.45	19.35	74.19
fan	0	0	100.00	0	0	100.00
glass	7.49	11.23	81.28	6.45	14.52	79.03
handy	0	0.53	99.47	0	0	100.00
chant	2.14	7.49	90.37	1.61	6.45	91.94
wrath	9.63	5.88	84.49	3.23	12.90	83.87
mass	0	1.60	98.40	0	3.23	96.77
clasp	0.53	4.28	95.19	1.61	3.23	95.16
grasp	0.53	4.81	94.66	1.61	0	98.39
class	4.28	10.16	85.56	1.61	8.06	90.32
contrast	2.67	4.28	93.05	1.61	3.23	95.16
draft	3.74	4.28	91.98	1.61	6.45	91.94
brass	2.14	6.42	91.44	1.61	6.45	91.94
panther	0	0.53	99.47	0	0	100.00
shaft	3.21	4.81	91.98	4.84	3.23	91.94
grant	1.07	5.35	93.58	1.61	8.06	90.32
hat	0	1.07	98.93	0	0	100.00
mask	0.53	2.67	96.80	0	4.84	95.16
package	0	0	100.00	0	0	100.00
dance	3.21	9.09	87.70	4.84	11.29	83.87
command	1.60	3.21	95.19	3.23	3.23	93.55
pajamas	41.51	38.01	20.47	54.84	41.94	3.22
rather	23.39	14.04	62.57	32.26	3.23	64.51
path	43.27	8.19	48.54	50.00	4.84	45.16

TABLE I—Continued

	Eastern Massachusetts								
	Male			Female			Children		
Word	[ɑ]	[a]	[æ]	[ɑ]	[a]	[æ]	[ɑ]	[a]	[æ]
blast	0	4.00	96.00	8.11	10.81	81.08	3.70	3.70	92.60
chance	0	0	100.00	5.41	18.92	75.67	0	7.40	92.60
aunt	8.00	80.00	12.00	32.44	43.25	24.32	22.22	77.78	0
fancy	0	0	100.00	0	0	100.00	0	0	100.00
can't	4.00	36.00	60.00	21.62	48.65	29.73	7.40	44.45	48.15
cast	0	0	100.00	0	8.11	91.89	0	11.10	88.90
ask	4.00	12.00	84.00	48.65	24.32	27.03	33.34	25.93	40.73
nasty	0	0	100.00	0	2.70	97.30	0	3.70	96.30
branch	0	0	100.00	5.41	10.81	83.78	0	7.40	92.60
after	0	4.00	96.00	16.22	16.22	67.56	11.11	11.11	77.78
bask	0	4.00	96.00	2.70	16.22	81.08	0	18.52	81.48
advantage	0	0	100.00	0	0	100.00	0	0	100.00
answer	0	0	100.00	2.70	13.52	83.78	0	7.40	92.60
castle	0	0	100.00	0	0	100.00	0	0	100.00
bath	40.00	16.00	44.00	75.68	8.11	16.21	62.97	14.82	22.21
glance	0	4.00	96.00	0	18.92	81.08	0	11.10	88.90
and	0	0	100.00	2.70	0	97.30	3.70	0	96.30
mast	0	0	100.00	2.70	5.41	91.89	3.70	3.70	92.60
man	0	0	100.00	0	0	100.00	0	0	100.00
chaff	4.00	16.00	80.00	10.82	13.52	75.67	7.40	18.52	74.08
half	80.00	12.00	8.00	89.20	8.10	2.70	81.49	14.82	3.69
pass	0	0	100.00	18.92	5.41	75.67	11.11	3.70	85.19
grass	0	0	100.00	16.21	5.41	78.38	11.11	3.70	85.19
fast	0	0	100.00	2.70	5.41	91.90	3.70	7.40	88.90
gasp	0	0	100.00	0	2.70	97.30	0	3.70	96.30
last	8.00	4.00	88.00	45.94	13.52	40.54	37.04	14.82	48.15
laugh	80.00	8.00	12.00	97.30	0	2.70	92.60	3.70	3.70
stand	0	0	100.00	0	0	100.00	0	0	100.00
land	0	0	100.00	2.70	0	97.30	0	0	100.00
flask	0	8.00	92.00	13.52	10.81	75.67	7.40	14.82	77.78
staff	20.00	12.00	68.00	40.54	18.92	40.54	40.74	18.52	40.74
drama	12.00	12.00	76.00	35.14	8.11	56.75	25.93	3.70	70.37
master	0	0	100.00	8.10	13.52	78.38	3.70	18.52	77.78
basket	0	0	100.00	2.70	10.80	86.50	3.70	14.82	81.48
vast	0	0	100.00	10.81	8.10	81.09	7.40	11.11	81.49
task	0	0	100.00	0	10.80	89.20	0	7.40	92.60
France	4.00	4.00	92.00	2.70	13.52	83.78	0	7.40	92.60
rasp	0	4.00	96.00	0	5.40	94.60	0	3.70	96.30
past	0	4.00	96.00	8.10	5.40	86.50	7.40	3.70	88.90
Nebraska	0	16.00	84.00	10.80	21.62	67.58	3.70	14.82	81.48
fan	0	0	100.00	0	0	100.00	0	0	100.00
glass	0	4.00	96.00	10.80	21.62	67.58	11.11	7.40	81.49
handy	0	0	100.00	0	0	100.00	0	0	100.00
chant	0	4.00	96.00	2.70	10.80	86.50	7.40	0	92.60
wrath	4.00	16.00	80.00	2.70	10.80	86.50	3.70	14.82	81.48
mass	0	0	100.00	0	5.40	94.60	3.70	7.40	88.90
clasp	0	4.00	96.00	2.70	2.70	94.60	3.70	3.70	92.60
grasp	0	0	100.00	2.70	0	97.30	3.70	0	96.20
class	0	4.00	96.00	2.70	10.80	86.50	3.70	14.82	81.48
contrast	0	0	100.00	2.70	5.40	91.90	3.70	3.70	92.60
draft	0	0	100.00	2.70	10.80	86.50	0	11.11	88.90
brass	0	4.00	96.00	2.70	8.10	89.20	0	11.11	88.90
panther	0	0	100.00	0	0	100.00	0	0	100.00
shaft	0	4.00	96.00	8.10	2.70	89.20	3.70	0	96.30
grant	0	4.00	96.00	2.70	10.80	86.50	3.70	7.40	88.90
hat	0	0	100.00	0	0	100.00	0	0	100.00
mask	0	0	100.00	0	8.10	91.90	0	7.40	92.60
package	0	0	100.00	0	0	100.00	0	0	100.00
dance	0	0	100.00	8.10	18.92	72.98	3.70	3.70	92.60
command	0	0	100.00	5.40	5.40	89.20	7.40	0	92.60
pajamas	50.00	50.00	0	51.61	45.16	3.23	37.04	59.26	3.70
rather	28.00	4.00	68.00	41.93	3.23	54.84	29.63	3.70	66.67
path	36.00	0	64.00	70.97	9.68	19.35	70.38	3.70	25.93

TABLE I—Continued

	Orleans			Connecticut Valley		
Word	[ɑ]	[a]	[æ]	[ɑ]	[a]	[æ]
blast	0	0	100.00	0	13.33	86.67
chance	0	30.00	70.00	0	6.67	93.33
aunt	30.00	60.00	10.00	13.33	60.00	26.67
fancy	0	0	100.00	0	6.67	93.33
can't	10.00	90.00	0	0	20.00	80.00
cast	0	0	100.00	0	0	100.00
ask	0	10.00	90.00	0	13.33	86.67
nasty	0	0	100.00	0	0	100.00
branch	0	0	100.00	0	0	100.00
after	0	10.00	90.00	0	0	100.00
bask	0	0	100.00	0	0	100.00
advantage	0	0	100.00	0	0	100.00
answer	0	0	100.00	0	6.67	93.33
castle	0	0	100.00	0	0	100.00
bath	60.00	0	40.00	0	13.33	86.67
glance	0	0	100.00	0	0	100.00
and	0	0	100.00	0	0	100.00
mast	0	0	100.00	0	0	100.00
man	0	0	100.00	0	0	100.00
chaff	0	0	100.00	0	0	100.00
half	60.00	40.00	0	26.67	0	73.33
pass	0	0	100.00	0	0	100.00
grass	0	0	100.00	0	6.67	93.33
fast	0	0	100.00	0	0	100.00
gasp	0	0	100.00	0	0	100.00
last	0	0	100.00	0	0	100.00
laugh	100.00	0	0	33.33	20.00	46.67
stand	0	0	100.00	0	6.67	93.33
land	0	0	100.00	0	0	100.00
flash	0	0	100.00	0	0	100.00
staff	20.00	10.00	70.00	13.33	0	86.67
drama	0	40.00	60.00	6.67	20.00	73.33
master	0	0	0	0	6.67	93.33
basket	0	0	0	0	0	100.00
vast	0	0	0	0	0	100.00
task	0	0	0	0	0	100.00
France	0	20.00	80.00	0	0	100.00
rasp	0	0	0	0	0	100.00
past	0	0	0	0	0	100.00
Nebraska	0	20.00	80.00	0	0	100.00
fan	0	0	0	0	0	100.00
glass	0	0	0	0	6.67	93.33
handy	0	0	0	0	0	100.00
chant	0	10.00	90.00	0	0	100.00
wrath	20.00	0	80.00	0	0	100.00
mass	0	0	0	0	0	100.00
clasp	0	0	0	0	0	100.00
grasp	0	0	0	0	0	100.00
class	0	0	0	0	6.67	93.33
contrast	0	0	0	0	0	100.00
draft	0	0	0	0	0	100.00
brass	0	0	0	0	0	100.00
panther	0	0	0	0	0	100.00
shaft	0	0	0	0	6.67	93.33
grant	0	0	0	0	0	100.00
hat	0	0	0	0	0	100.00
mask	0	0	0	0	0	100.00
package	0	0	0	0	0	100.00
dance	0	0	100.00	0	6.67	93.33
command	0	0	100.00	0	6.67	93.33
pajamas	20.00	30.00	50.00	26.67	33.33	40.00
rather	20.00	20.00	60.00	13.33	6.67	80.00
path	30.00	10.00	60.00	0	6.67	93.33

England with parents born in New England; 2) Persons born in New England with parents born in the same town as the person, or within a five to ten mile radius. Over two hundred persons were recorded over a period of eight years. One hundred and eighty-seven were used in this study. The remainder were discarded because they did not fit into the preceding two selective groups.

In recording the pronunciation of each person, the following symbols were used [ɑ], [a], [æ]. Some variants of the sounds for which the three phonetic symbols stand were heard but in each case the symbol used was the one which was closest to what the recorder heard, the symbol for the half-front vowel [a] being used when it was impossible to distinguish between the back vowel [ɑ] and the front vowel [æ] or when the person clearly produced a half-front vowel [a]. Before each person read the list of words he was asked if his pronunciation on this particular list of words had ever been changed. If the answer was in the affirmative the person's pronunciation was not recorded. If the person hesitated in pronouncing any of the words he was asked to say the word in a sentence.

After this part of the study was completed, the next step was to make a statistical analysis of the material collected. The first step was to segregate each informant as to sex, birthplace, mother's and father's birthplace, and the pronunciation preference of each word read on the word list. A summary was made of the frequency of the vowel preference of each subject and this was expressed as a percentage of the total subjects regardless of sex, age or birthplace. Then the subjects were segregated according to geographic location and a tabulation was made of the sound frequency expressed as a percentage of the subjects who were born in that location. In this study, informants were used who were born in Eastern Massachusetts, within a short radius of Boston, with parents born in the same town or within a five to ten mile radius. As a basis for comparison, informants were also used who were born in Orleans, Cape Cod, and in the Connecticut Valley. Informants born in Orleans had both parents and grandparents who were born in Orleans and many were descended from the Mayflower. Informants born in the Connecticut Valley had parents who were born in New England but not always in the same town as the informant. The Eastern Massachusetts group was then subdivided according to the following classifications: Male, Female, and Children of both sexes, and the percentages were retabulated for these groups in relation to this particular total. The subjects from the Orleans and Connecticut Valley areas were tabulated in the same manner, that is, the informant's vowel preference for each word was tallied and expressed as a percentage of the total examined from each of the two areas. It may be noted here that the informants from the Connecticut Valley were all males and that the children from Eastern Massachusetts were of Scotch-Irish and Irish descent.

Results

The results of the tabulations were grouped according to word-sound preference for the entire list of words used in this study. The pronunciation preference was expressed as a percentage under the three symbols used to record the pronunciation: the back vowel [ɑ], the half-front vowel [a], and the front vowel [æ]. Table I above shows the results obtained.

Further analysis showed that all persons examined showed a relatively high frequency in the use of the sound [ɑ] in the following group of words:

All persons examined showed a relatively high frequency in the use of the sound [a] in a somewhat different group of words. Where the same words appeared in Table II and in Table III, below, the word order and percentage preference were found to be different for the various categories.

TABLE II

PERCENTAGE PREFERENCE FOR SOUND [ɑ]

	All Persons		Eastern Massachusetts				
	N.E.	Total	Male	Female	Children	Orleans	Conn. Valley
	%	%	%	%	%	%	%
laugh	73	90	80	97	92.6	100	33
half	61.5	85.5	80	89	81.5	60	26.7
bath	48.7	61.3	40	75.7	63	60	—
path	43	50	36	80	70	30	—
pajamas	41.5	54.8	52	51.7	37	20	26.7
aunt	31	35.5	—	32	22	30	13
drama	24.6	25.8	12	35	26	—	—
rather	23.4	32.3	28	41.9	29.6	20	13
staff	23	32.3	20	40.5	40.7	20	13
ask	19.8	30.7	—	48.7	33	—	—
last	17.7	30.7	—	46	37	—	—
can't	10.7	14.5	—	21.6	—	10	—
after	10	9.7	—	16	11	—	—
wrath	9.6	—	—	—	—	20	—

It may be seen from the above table that the pronunciation preference expressed as a percent for each of the words listed was carried to ten percent. All of the remaining sixty-three words showed a pronunciation preference of less than ten percent. Eastern Massachusetts included one additional word, that does not appear on the above table the word "pass," with a pronunciation preference of eleven percent. The following headings also showed a pronunciation preference of over ten percent for words that do not appear on the above table: Females—pass 19%, grass 16%, flask 13.5%, chaff 10.8%, vast 10.8%, Nebraska 10.8%, glass 10.8%; Children—pass, grass, glass 11%. It may be seen that Eastern Massachusetts followed the pattern of all persons examined in New England in the pronunciation preference of the words listed in Table II and in the word order preference. Orleans and the Connecticut Valley followed the same pattern to a lesser degree.

As in the second table, it may be seen that the pronunciation preference expressed as a percent was carried to ten percent, nine and six tenths percent to be exact. All of the remaining sixty-three words showed a pronunciation preference of less than ten percent. The following words appeared on the third table but did not appear on the second table: chance, France, blast, answer, Nebraska, glass, glance, class, chaff. The following words appeared on the second table but had a pronunciation preference rating of less than ten percent on the third table: laugh, bath, path, wrath.

Certain categories showed a pronunciation preference of about ten percent or over for some words not listed in the third table: Females—dance 18.9%, bask 16%, master 13.5%, branch, flask, basket, task, chant, wrath, draft, grant

TABLE III

PERCENTAGE PREFERENCE FOR SOUND [a]

	All Persons		Eastern Massachusetts				
	N.E.	Total	Male	Female	Children	Orleans	Conn. Valley
	%	%	%	%	%	%	%
aunt	58.3	58	80	43.3	77.8	60	60
pajamas	38	41.9	48	45	59.3	30	33
can't	34	43.6	36	48.7	44.5	90	20
ask	19	19	12	24	25.9	10	13
drama	15.5	9.7	12	—	—	40	20
rather	14	—	—	—	—	20	—
chance	13.9	11.3	—	18.9	—	30	—
staff	13.4	16	12	18.9	18.5	10	—
half	12	9.7	12	—	14.8	40	—
France	12	9.7	—	13.5	—	20	—
blast	11	—	—	10.8	—	—	13
answer	11	—	—	13.5	—	—	—
Nebraska	11	19	16	21.6	14.8	20	—
glass	11	14.5	—	21.6	—	—	—
last	10.7	9.7	—	13.5	14.8	—	—
glance	10	12.9	—	18.9	11	—	—
class	10	—	—	10.8	14.8	—	—
after	9.6	11.3	—	16.2	11	10	—
chaff	9.6	14.5	16	13.5	18.5	—	—

10.8%, path 9.7%; Males—bath, wrath 16%; Children—bask, master 18.5%, path, flask, basket, wrath 14.8%, cast, vast, draft, brass 11%; Orleans—path, chant 10%; Connecticut Valley—bath 13%, laugh 10%. Thus Eastern Massachusetts Females and Children included more words with a percentage preference above nine percent than Males, Orleans or Connecticut Valley. It will also be seen that the various categories did not show the same percentage preference for the various words nor did they show the same preference order in percentages as the category of all persons examined showed.

It may be seen from Tables II and III that the number of words that showed a relatively high frequency, that is above ten percent, in the use of [ɑ] or [a] was limited. If a line were drawn at a higher percent, namely thirty percent, then the number of words appearing in both tables would be further decreased. In Table II, the category All Persons—New England would then show a preference of thirty percent or over in the use of [ɑ] for the following words: laugh, half, bath, path, pajamas, aunt. Total Eastern Massachusetts would show a preference of thirty percent or over for the following words: laugh, half, bath, path, pajamas, aunt, rather, staff, ask, last. On the same basis of thirty percent or over the two groups would show a preference for [a] in Table III in the following words: All Persons—aunt, pajamas, can't; Eastern Massachusetts—aunt, pajamas, can't.

Therefore, for these words mentioned in the previous paragraph, Table I shows a relatively high frequency in the use of [ɑ] or [a] and a relatively low frequency in the use of [æ]. While for all of the remaining words, by far the majority, Table I shows a high frequency in the use of the sound [æ] and a low frequency in the use of [ɑ] or [a]. American lexicographers, linguists and phoneticians have long recognized the presence of [æ] as a sound used by New Englanders in this group of words. Even a cursory glance at the maps of *The Linguistic Atlas of New England* which examined somewhat over a dozen of these words as isolated words or as parts

of phrases indicates the use of [æ] by New Englanders.

From a further statistical analysis another graphic division of the three sounds [ɑ], [a], [æ] was made. This was done to strengthen the conclusions. The persons examined were grouped into the following areas: 1) Eastern Massachusetts born subjects including Orleans, with parents born in the same town or within a five to ten mile radius; 2) Eastern Massachusetts born subjects, with parents born in New England; 3) New England born subjects with parents born in New England.

The results of this further graphic division of the three sounds [ɑ], [a], [æ] are shown in the following table. As in the previous tables, the word-sound preference expressed as a percent is given under each sound for persons born in: 1) Eastern Massachusetts including Orleans; 2) Eastern Massachusetts, Parents New England; 3) New England, Parents New England. The word order is not random as in Table I but is given in order of percentage preference for each sound and each category.

A close correlation was found between Eastern Massachusetts subjects, including Orleans, and New England subjects with parents born in New England on the pronunciation preference of the words shown in the second and third tables. Eastern Massachusetts subjects with parents born in New England accounted for the majority of additional words mentioned in the explanatory paragraphs following Tables II and III but not included in the tables. This latter group also showed a pronunciation preference in the use of the sound [a] ranging from ten percent to forty-seven percent for forty-four of the words on the original list of sixty-three words. They also showed a five percent preference for all of the remaining words except for the following: package, handy, fan, land, stand. Even "man" and "and" showed a five percent preference which the first and third groups did not favor. Eastern Massachusetts subjects with parents born in New England showed a pronunciation preference in the use of the sound [ɑ] ranging from ten percent to sixty-nine percent for thirty-one of the words on the list and a five percent preference for the next nine. The twenty-three remaining words were pronounced with the front vowel [æ].

The first and third groups were much more conservative in using [a] or [ɑ] in the sixty-three words. More of the persons in these groups used the historically older front vowel. The first group showed a pronunciation preference in the use of the sound [a], ranging from eleven percent to fifty-eight percent for fifteen of the words and from five percent to ten percent for eighteen of the words. The remaining words showed a percentage preference of four to zero. The third group showed a pronunciation preference in the use of the sound [a], ranging from ten percent to fifty-eight percent for sixteen of the words and from five percent to nine percent for twenty-three of the words; the remaining words showed a percentage of four to zero. The two groups included ten words in common that had a percentage preference above ten percent: aunt, can't, pajamas, ask, staff, chance, half, drama, glass, France. These words and the remaining words, not common to both groups, all appeared on Table III except "wrath."

The first and third groups showed a pronunciation preference in the use of the sound [ɑ], ranging from ten percent to ninety-one percent in fourteen of the words, eleven being common to both

TABLE IV

PERCENTAGE PREFERENCE FOR SOUNDS DIFFERENT GRAPHIC DIVISION

[a] Eastern Massachusetts including Orleans		[a] Eastern Massachusetts parents New England		[a] New England parents New England	
Word	%	Word	%	Word	%
laugh	91.67	pajamas	69.23	laugh	61.74
half	81.95	laugh	68.42	half	48.70
bath	61.12	bath	63.19	bath	40.87
pajamas	50.00	path	61.54	path	40.40
path	47.23	half	57.90	pajamas	35.35
aunt	34.72	drama	47.37	aunt	28.70
staff	30.56	aunt	42.11	drama	26.09
rather	30.56	ask	31.58	staff	18.26
ask	26.39	after	31.58	rather	18.18
last	26.39	rather	30.77	ask	15.65
drama	22.22	can't	26.32	last	12.17
can't	13.89	glass	26.32	wrath	12.17
pass	9.72	blast	21.05	after	11.30
grass	8.33	chance	21.05	chaff	9.57
after	8.33	chaff	21.05	can't	8.70
chaff	6.95	last	21.05	glass	8.70
vast	5.56	staff	21.05	past	6.96
Nebraska	5.56	wrath	21.05	pass	6.09
glass	5.56	glance	15.79	grass	6.09
wrath	5.56	grass	15.79	class	6.09
blast	4.17	master	15.79	draft	5.22
master	4.17	Nebraska	15.79	glance	4.35
past	4.17	chant	15.79	fast	4.35
shaft	4.17	draft	15.79	blast	3.48
dance	4.17	pass	10.53	chance	3.48
France	2.78	fast	10.53	master	3.48
command	2.78	basket	10.53	basket	3.48
branch	1.39	past	10.53	Nebraska	3.48
bask	1.39	class	10.53	contrast	2.61
answer	1.39	contrast	10.53	bask	2.61
and	1.39	dance	10.53	vast	2.61
mast	1.39	nasty	5.26	task	2.61
fast	1.39	branch	5.26	France	2.61
land	1.39	bask	5.26	brass	2.61
flask	1.39	advantage	5.26	shaft	2.61
basket	1.39	stand	5.26	dance	2.61
chant	1.39	vast	5.26	chant	2.61
clasp	1.39	task	5.26	flask	1.74
grasp	1.39	France	5.26	nasty	.87
class	1.39	command	5.26	advantage	.87
contrast	1.39	fancy	0	stand	.87
draft	1.39	cast	0	grant	.87
brass	1.39	answer	0	mask	.87
grant	1.39	castle	0	command	.87
chance	0	and	0	fancy	0
fancy	0	mast	0	cast	0
cast	0	man	0	branch	0
nasty	0	gasp	0	answer	0
advantage	0	land	0	castle	0
castle	0	flask	0	and	0
glance	0	rasp	0	mast	0
man	0	fan	0	man	0
gasp	0	handy	0	gasp	0
stand	0	mass	0	land	0
task	0	clasp	0	rasp	0
rasp	0	grasp	0	fan	0
fan	0	brass	0	handy	0
handy	0	panther	0	mass	0
mass	0	shaft	0	clasp	0
panther	0	grant	0	grasp	0
hat	0	hat	0	panther	0
mask	0	mast	0	hat	0
package	0	package	0	package	0

TABLE IV—Continued

[a] Eastern Massachusetts including Orleans		[a] Eastern Massachusetts parents New England		[a] New England parents New England	
Word	%	Word	%	Word	%
aunt	58.34	aunt	47.37	aunt	58.26
can't	50.00	answer	31.58	pajamas	36.36
pajamas	40.28	can't	31.58	can't	24.35
Nebraska	19.45	pajamas	30.77	rather	20.20
ask	18.06	grasp	26.32	ask	20.00
staff	15.28	rather	23.08	drama	16.52
chance	13.89	ask	21.05	chance	13.92
half	13.89	glance	21.05	blast	13.92
drama	13.89	vast	21.05	answer	13.92
chaff	12.50	France	21.05	France	13.04
glass	12.50	class	21.05	last	12.17
after	11.11	contrast	21.05	staff	12.17
glance	11.11	blast	21.05	class	12.17
France	11.11	after	21.05	half	11.30
wrath	11.11	chaff	21.05	glass	10.44
bask	9.72	half	21.05	path	10.10
bath	9.72	last	21.05	glance	9.57
dance	9.72	drama	21.05	after	8.70
last	8.33	chant	21.05	vast	8.70
flask	8.33	clasp	21.05	dance	8.70
blast	6.95	brass	21.05	chaff	7.83
answer	6.95	shaft	21.05	master	7.83
master	6.95	grant	21.05	chant	7.83
chant	6.95	dance	15.79	grasp	7.83
class	6.95	path	15.38	grass	6.96
grant	6.95	chance	10.53	basket	6.96
branch	5.56	fancy	10.53	past	6.96
basket	5.56	nasty	10.53	brass	6.96
task	5.56	branch	10.53	laugh	6.95
draft	5.56	castle	10.53	branch	6.09
brass	5.56	pass	10.53	pass	6.09
rather	5.56	grass	10.53	fast	6.09
path	5.56	fast	10.53	flask	6.09
cast	4.17	gasp	10.53	Nebraska	6.09
vast	4.17	staff	10.53	shaft	6.09
rasp	4.17	master	10.53	bask	5.22
past	4.17	basket	10.53	task	5.22
mask	4.17	task	10.53	clasp	5.22
mast	2.78	rasp	10.53	contrast	5.22
pass	2.78	past	10.53	bath	4.35
grass	2.78	glass	10.53	grant	4.35
fast	2.78	wrath	10.53	draft	3.48
laugh	2.78	hat	10.53	command	3.48
mass	2.78	command	10.53	rasp	3.48
clasp	2.78	cast	5.26	fancy	2.61
contrast	2.78	bask	5.26	cast	2.61
shaft	2.78	advantage	5.26	advantage	2.61
command	2.78	bath	5.26	wrath	2.61
nasty	1.39	and	5.26	nasty	1.74
gasp	1.39	mast	5.26	castle	1.74
fancy	0	man	5.26	and	1.74
advantage	0	laugh	5.26	mast	1.74
castle	0	flask	5.26	gasp	1.74
and	0	Nebraska	5.26	hat	1.74
man	0	mass	5.26	mask	1.74
stand	0	draft	5.26	man	.87
land	0	panther	5.26	stand	.87
fan	0	mask	5.26	handy	.87
handy	0	stand	0	mass	.87
grasp	0	land	0	panther	.87
panther	0	fan	0	land	0
hat	0	handy	0	fan	0
package	0	package	0	package	0

TABLE IV—Continued

[æ] Eastern Massachusetts including Orleans		[æ] Eastern Massachusetts parents New England		[æ] New England parents New England	
Word	%	Word	%	Word	%
fancy	100.00	handy	100.00	package	100.00
advantage	100.00	land	100.00	class	100.00
castle	100.00	fan	100.00	fan	100.00
man	100.00	package	100.00	land	100.00
stand	100.00	cast	94.74	panther	99.13
fan	100.00	and	94.74	mass	99.13
handy	100.00	mast	94.74	handy	99.13
panther	100.00	man	94.74	man	99.13
hat	100.00	stand	94.74	hat	98.26
package	100.00	flask	94.74	stand	98.26
nasty	98.62	mass	94.74	gasp	98.26
and	98.62	panther	94.74	mast	98.26
gasp	98.62	mask	94.74	and	98.26
land	98.62	fancy	89.47	castle	98.26
grasp	98.62	bask	89.47	mask	97.40
mass	97.23	advantage	89.47	nasty	97.40
cast	95.84	castle	89.47	past	97.40
mast	95.84	gasp	89.47	fancy	97.40
fast	95.84	rasp	89.47	rasp	96.53
clasp	95.84	hat	89.47	advantage	96.53
contrast	95.84	nasty	84.21	command	95.66
rasp	95.84	branch	84.21	grant	94.79
mask	95.84	task	84.21	clasp	94.79
task	94.45	clasp	84.21	branch	93.92
command	94.45	brass	84.21	grasp	92.18
branch	93.06	shaft	84.21	task	92.18
basket	93.06	grant	84.21	flask	92.18
draft	93.06	command	84.21	bask	92.18
shaft	93.06	fast	78.95	contrast	91.31
brass	93.06	pass	78.95	draft	91.31
answer	91.67	basket	78.95	shaft	91.31
chant	91.67	past	78.95	Nebraska	90.44
class	91.67	Nebraska	78.95	brass	90.44
grant	91.67	draft	78.95	fast	89.57
past	90.29	grasp	73.68	basket	89.57
vast	90.29	grass	73.68	chant	89.57
flask	90.29	master	73.68	master	88.70
bask	88.90	France	73.68	dance	88.70
glance	88.90	dance	73.68	vast	88.70
grass	88.90	chance	68.42	pass	87.83
master	88.90	answer	68.42	grass	86.96
blast	88.90	staff	68.42	glance	86.09
pass	87.51	vast	68.42	answer	86.09
chance	86.12	wrath	68.42	past	86.09
France	86.12	class	68.42	wrath	85.22
dance	86.12	contrast	68.42	France	84.35
wrath	83.34	blast	63.19	blast	82.61
glass	81.95	glance	63.19	chance	82.61
after	80.56	chaff	63.19	chaff	82.61
chaff	80.56	last	63.19	glass	80.72
Nebraska	75.01	glass	63.19	after	80.00
last	85.28	chant	63.19	last	75.66
drama	63.89	after	52.63	staff	69.57
rather	63.89	ask	47.37	can't	66.96
ask	55.56	rather	46.15	ask	64.35
staff	54.17	can't	42.11	rather	61.61
path	47.23	drama	31.58	drama	57.39
can't	36.11	bath	31.58	bath	54.78
bath	29.17	half	26.32	path	49.49
pajamas	9.72	laugh	26.32	half	39.13
aunt	6.95	path	23.08	laugh	31.31
laugh	5.56	aunt	10.53	pajamas	28.28
half	4.17	pajamas	0	aunt	13.04

groups. All fourteen appeared in Table II. The first group showed eight words with a pronunciation preference of ten percent to five percent, the third group eight. At that point the pronunciation preference dropped down rapidly to three, two, one percent and to zero on the last nineteen words for both groups. The first and third groups did not have the word order follow exactly, but it did follow fairly closely above and below ten percent. The percentage numbers also followed each other fairly closely except for eight words which showed a difference of more than ten points between the two groups and were all above ten percent in percentage preference in both groups. Group one gave laugh 91.7%, half 82%, bath 61%, pajamas 50%, staff 30.6%, rather 30.6%, ask 26%, last 26%. Group three gave laugh 61.7%, half 48.7%, bath 40.9%, pajamas 35%, staff 18%, rather 18%, ask 15.7%, last 12%. Similarly, as seen in Table I, these same words which showed a relatively high frequency, that is above ten percent, in the use of [ɑ] showed a lower or higher frequency in the use of [æ] or [a] as seen in the following samples: half [ɑ] 82%, [a] 13.9%, [æ] 4%; rather [ɑ] 30.6%, [a] 5.6%, [æ] 63.9%. All of the remaining words showed, as in Table I, a high frequency in the use of [æ]. This again would include by far the larger number of words used in this study.

From the two graphic divisions used as a basis in this study, the one analyzed in the first part of the paper and the second used to strengthen the first and to corroborate the various deductions and conclusions, it may be seen that the "broad A" still plays a part in the speech of New Englanders and specifically in that of Eastern Massachusetts. Persons born in Eastern Massachusetts with parents born in the same town or nearby, showed a marked preference for the use of the "broad A" in laugh 91.7%, half 82%, pajamas 50%, aunt 34.7%, drama 22%, rather 30.6%, words which the latest edition of Webster's Dictionary records with the "broad A"* as the first pronunciation and the half-front vowel as the second pronunciation. The exceptions are "rather" which Webster records with the half-front vowel, and "drama" which is recorded with the "broad A" as the first pronunciation and the front vowel as the second pronunciation. Kenyon and Knott in *A Pronouncing Dictionary of American English*, show a different order of symbols for some of these words. However, the Kenyon and Knott approach is non-statistical, covers a wider area than Eastern Massachusetts, and has an earlier date than this study.

This same group of Eastern Massachusetts persons, of second generation, preferred the "broad A" in "bath" 61% and used it to a lesser degree in path 47%, staff 30.6%, ask 26%, last 26%, can't 13.9%. They also used the half-front vowel somewhat profusely as has already been indicated. Evidently the "broad A" and its first cousin, the half-front vowel, have not died out in present day usage in New England, as yet.

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*It is interesting to note, however, that this pronunciation is not standard for the entire country.

THE PHONETIC CONTEXTS OF [ɔɪ]

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THE investigation reported here is the outgrowth of a theoretical interest and a practical desire. The theoretical interest is in the phonetic structure of English, i.e., the phonetic contexts in which the sounds of English occur. The practical desire is for the creation of a body of source material that will facilitate the compilation of comprehensive word lists for use in phonetic exemplification or diction drill. The specific sound dealt with is [ɔɪ], and the focal goal is the determination of the sounds next to which it stands in words.[1]

In such an undertaking, a basic, preliminary decision that must be made is, shall the determination be quantitative. If it is to be quantitative as well as qualitative, need for a numerically prescribed list of words from which to draw data is clearly indicated. This in turn suggests the use of some one of the lists of commonest words as the source of information. In this connection, though in a somewhat different context, Dewey, p. 6, says

> A warning should be inserted here against attempting to compile data with respect to sillables or sounds on the basis of any list of commonest words only, however good. It is an interesting and significant fact that some of the commonest sillables of the language scarcely occur among the 500 or even 1000 commonest words, but owe their importance rather to occurrence in many different words each relativly infrequent. This is particularly true of prefixes, suffixes, and other combining forms of Latin or Greek origin, whereas in any short list of commonest words short and Anglo-Saxon words predominate. The result, as proved by ruf analises not here reported, is that analitic data based on commonest words *only* wil giv, inevitably, a seriously distorted picture of the language as a whole.

Tentative agreement, at least, with this viewpoint, and the belief that it is true for sound contexts as well as syllables, led to the decision not to use lists of commonest words as the prime source of data, and hence, to the making of the determination an essentially qualitative one.

Instead, the results are based primarily on a word-by-word investigation of the vocabulary in *A Pronouncing Dictionary of American English*, which vocabulary is described as ". . . intended to include the great body of common words in use in America. Besides, it includes a great many somewhat unusual words. . . ."[2] The information thus gathered has been supplemented by a similar survey of *The Teacher's Word Book of 30,000 Words*.[3] Further addition has been made by searching in likely sections of *Webster's New International Dictionary, Second Edition*. Types of words excluded from consideration are proper nouns and adjectives, words labelled as foreign by *Webster's*,[4] and

[1] Godfrey Dewey, *Relativ Frequency of English Speech Sounds* (Cambridge, Mass., 1950), p. 58, has already determined the syllablic contexts in which [ɔɪ] occurs in a list of commonest syllables.

[2] John Samuel Kenyon and Thomas Knott, *A Pronouncing Dictionary of American English* (Springfield, Mass., 1944), p. vi.

[3] Edward L. Thorndike and Irving Lorge, *The Teacher's Word Book of 30,000 Words* (New York, 1944).

[4] *Webster's New International Dictionary, Second Edition, Webster's Collegiate Dictionary, Fifth Edition,* and *A Pronouncing Dictionary of American English* are the lexicographical authorities followed in making this analysis. In a few instances, the writer has gone beyond these sources, especially with regard to syllabications heard.

compound words formed of two or more distinct words. Of the source list remaining, the following observations have been made.

Plosives

[p]: [ɔɪ] precedes [p] only in the word *coypu,* in which the [p] stands alone (i.e., not in syllabic combination with another consonant) in the following syllable.

[ɔɪ] follows [p] alone in such as *point* and its derivatives,[5] *poignency,* and *poil*; also when [p] is the final element in the sole initial consonant cluster ending in [p], namely, [sp-], but only in the word *spoil.*

[b]: As in the case of [p], [ɔɪ] precedes [b] only in one word, *foible,* in which the [b] is likewise in the succeeding syllable.

[ɔɪ] follows [b] only when [b] stands alone, as in *boil, buoy* ['bʊɪ, bɔɪ], the obsolete noun *boist,* and *cuboides.*

[t]: In contrast with [p] and [b], [ɔɪ] precedes [t] under a variety of circumstances. It precedes [t] standing alone in the same syllable in *exploit, adroit, quoit,* and a group of uncommon and dialectal words such as *doit* and *hoit*; also in the following syllable, but only in one everyday word, *exploitation;* and again in a few words of the type of *loiter* in which the intervocalic [t] may be heard in either syllable. Not only does [ɔɪ] precede [t] alone, but when it functions as the first element of the initial cluster [tr-] and of the final cluster [-ts]. It occurs before [tr-] in the obsolete noun *poitrel, goitrous,* and in the syncopated pronunciations of *reconnoitering(-er).* Inflected forms, such as *dacoits,* account for the appearance of [ɔɪ] before [-ts].

[ɔɪ] follows [t] only when alone, as in *toil.*

Two words involving [t] and [ɔɪ] are of somewhat added interest. *Toit* and *hoity-toity* contain [ɔɪ] between [t]'s, and the latter is one of two words in which [ɔɪ] appears twice, the other being *roister-doister.*

[d]: As might be expected, the juxtaposition of [ɔɪ] and [d] generally parallels that of [ɔɪ] and [t], as exemplified by *typhoid, roid, moidore, haploidic, embroidery, adenoids,* and *doily.* This last is the only common word in which [ɔɪ] follows [d].

There are, however, certain differences between the [t] and [d] word lists. There are many more words in which [ɔɪ] precedes [d] than [t]. Most of these are words containing the suffix *-oid,* such as *aneroid,* or are past participles of verbs ending in [ɔɪ], such as *decoyed.* There are no such homogenous groups in the [t] list.

[k]: The combinations of [ɔɪ] with [k] parallel those with [t] and [d], but there are fewer examples, especially in the case of [ɔɪ] before [k]. In the same syllable, [ɔɪ] precedes [k] only in the related words *hoick* and *yoick* and their inflected forms *hoicks(-ed)* and *yoicks(-ed).* In *boycott* [ɔɪ] precedes [k] alone in a following syllable, while in *poiklitic* the [k] is the first element of the following initial cluster, [kl-].

[ɔɪ] follows [k] only when it is alone, as in *recoil* and *koine.*

[g]: The [g] list presents a sharp contrast with the three preceding plosive lists, there being only five words, *fungoid, indigoid, goiter, gargoyle,* and the one word in which [ɔɪ] precedes [g], *coigue.* This last is the only case in which [ɔɪ] precedes a consonant in cluster but not when alone.

[5] Subsequently, unless there is particular reason for mentioning them, the inclusion of the derivatives of any words cited will be assumed unless their inclusion would change the phonetic context in point.

Nasals

[m]: Except in the uncommon words *oime* and *poimenic,* [ɔɪ] precedes [m] only in words such as *enjoyment.* Hence, [ɔɪ] does not stand in the same syllable with a following [m].

[ɔɪ] follows [m] only when [m] stands alone in the same syllable, as in *turmoil, moist,* and *moisanite.*

[n]: Coming to another alveolar, greater variety of combination occurs even than in the case of [t] or [d]. [ɔɪ] precedes [n] alone, both in the same and following syllables, as in *join, poinsettia, broyne,* and *coyness.* There are only a few words in which the [n] is in the following syllable, and the last preceding example is the only common word in the group. Furthermore, it precedes [n] functioning as the first element of the final clusters [-nt], [-nts], [-nd], and [-nz], as in *joint(-s), appoint(-s),* and *aroint; groined, eloigned (eloined),* and *adjoinedly* [ə'dʒɔɪnədlɪ, ə'dʒɔɪndlɪ]; *coins* and *loins.*

[ɔɪ] follows [n] only when alone. Usually it is in the same syllable, as in *noise, noil,* and *quinoidine.* In a few words, such as *crinoid* and *adenoid* pronounced ['krɪnɔɪd] and ['ædn̩ɔɪd], [ɔɪ] follows in the succeeding syllable.

In *anoint* and its dialectal form, *noint,* [ɔɪ] occurs between [n]'s.

[ŋ]: "The diphthongs do not occur before [ŋ],"[6] nor after. The possibility of the latter type appearance is, of course, definitely limited by the fact that [ŋ] does not begin syllables.

The Lateral

There are more different combinations of [ɔɪ] with [l] than any other sound. It precedes [l] alone in such as *oil, trefoil,* and the archaic verb *assoil.* The [l] is in the following syllable in a few words such as *toilet(-lette), coyly,* and *joyless.* [ɔɪ] also occurs before the [l] of [-lt] in *spoilt* and of [-ld] and [-lz] in such inflected forms as *roiled, embroiled,* and *foils* and in the word *moiles.*

There is a similar variety of combinations in which [ɔɪ] follows [l]. In such as *tabloid* and *colloidal* the [l] alone is found in the same syllable, while in a few words the [l] may be in the preceding syllable, for example, the nouns *alloy* and *haloid* pronounced ['ælɔɪ] and [hælɔɪd], respectively. [ɔɪ] is also found after [l] when it is the final element in certain initial clusters. [pl-] precedes in such as *deploy,* and depending upon the syllabication, *exploit* places [pl-] or [spl-] before [ɔɪ] in the same syllable. [ɔɪ] also comes after [kl-] in such as *cloister, cloy,* and *cycloid.* In the word *sloyd,* [sl-] + [ɔɪ] occurs.

Fricatives

[f]: Except in such a word as *joyful,* in which [ɔɪ] precedes [f] in the following syllable, [ɔɪ] precedes [f] only in *coif* and its two inflected forms, *coifs* and *coifed.*

[ɔɪ] follows [f] only when it is alone in the same syllable, as in *foist, lymphoid,* and *sainfoin.*

[v]: Except in *voivode,* [ɔɪ] stands next to [v] only in words in which [ɔɪ] follows [v], as in *void, clairvoyance,* and the obsolete noun *voisinage.*

[θ], [ð]: [ɔɪ] does not combine with either dental fricative.

[s]: [ɔɪ] precedes [s] standing alone, as in *invoice, moisten, boisterous,* and *bourgeois.* Of the five words in which [ɔɪ] precedes [s] in the next syllable, only *joysome* and *noisome* qualify as common words. In a few words, such as *hoist* and *voiced,* [ɔɪ] precedes [-st], as it does [-sts] in such as *foists.*

[6] Leonard Bloomfield, *Language* (New York, 1933), p. 135.

There are five words in which [ɔɪ] follows [s], namely, *soil, soy, assoil, ellipsoid* and *myxoid.*

[z]: In the rather small number of words with [ɔɪ] and [z], [ɔɪ] precedes in most, as in *poise, avoirdupois,* and the words in which the [z] is in a different syllable, i.e., *foison, cloisonné,* and *poison.* It also precedes [-zd], the only final cluster beginning with [z], in such as *noised.*

[ɔɪ] follows [z] in only three words, *rhizoid, trapezoid,* and *borzoi.*

[ʃ]: [ɔɪ] stands next to [ʃ] in *viceroyship.*

[ʒ]: [ɔɪ] and [ʒ] do not appear side by side in a word.

[h]: [ɔɪ] precedes [h] only in *boyhood.*

[ɔɪ] follows [h], of necessity in the same syllable, as in *ahoy, hobbledehoy,* and *hoise.*

Affricates

[tʃ]: [ɔɪ] precedes [tʃ] in *exploiture* and follows it in *choice* and *choil.*

[dʒ]: [ɔɪ] stands next to [dʒ] only in words in which [ɔɪ] follows [dʒ] standing alone, as for example, *joist, rejoice,* and *jointure.*

Glides

[w]: [ɔɪ] follows [w], but only when [w] is the second element of the cluster [kw-], and then only in alternate pronunciations of *sequoia, turquoise, quoin (coign),* and *quoit.* This is the one case in which [ɔɪ] follows a sound in cluster but not alone.

[ʍ(hw)]: [ɔɪ] does not combine with "voiceless [w]."

[r]: [ɔɪ] follows but does not precede [r]. It does so after [r] alone, as in *thyroid, arroyo,* and *asteroid.* In a word such as the last example the context may of course change if the *r* is syllabicated with the preceding unstressed vowel. Then [ɔɪ] will appear after [ɚ]. There are twelve initial clusters ending in [r]. [ɔɪ] occurs at least once after six of them, namely, [br-] *broil,* [tr-] *troy,* [dr-] *hydroid,* [kr-] *ochroid* (the sole example), [gr-] *Negroid,* and [str-] *destroy.*

[j]: [ɔɪ] stands next to [j] only in *yoick(-s).*

Vowels

Considering the relative rarity of juxtaposed vowels in English, it is not surprising to find, as compared with consonant groups, that there are comparatively few examples of [ɔɪ] standing next to a vowel or diphthong. In most cases the adjoining vowel is unstressed and usually is in a separate syllable.

Most of the occurrences in point are of [ɔɪ] preceding a vowel. The four words *poietic, employee, arroyo,* and *paranoiac* are the only ones in which a stressed or semi-stressed vowel is preceded by [ɔɪ]. The unstressed vowels preceded are [ɪ], [ə], and [ɚ(ə)]. The largest group of words in which [ɪ] follows [ɔɪ] is made up of the present participles of infinitives ending in [ɔɪ], as *toying, decoying,* and *annoying.* More limited types are exemplified by *voyage* and *boyish,* with *cloyedness* as a lone addition. It may well be that this last example occurs with [ə] in place of [ɪ], just as it is possible that some of the words covered by the following citations are heard with [ɪ] rather than the [ə] here assigned to them. Such words as *flamboyance* and *moiety* are found along with *royal, loyal, enjoyable, joyous, cloiochoantic,* and *paranoia.* The words in which [ɔɪ] precedes [ɚ(ə)] are of two types, those in which [ɚ(ə)] represents the suffix *-er* indicating 'having to do with,' as in *employer* and *lawyer,* and those in which the [ɚ(ə)] has no such semantic function. Of this smaller

TABLE I
[ɔɪ]

	Precedes				Follows			
	Alone		In Initial Clusters	In Final Clusters	Alone		In Initial Clusters	In Final Clusters
	S S	D S			S S	D S		
p		x			x		sp-	
b		x			x		--	
t	x	x	tr-	-ts	x			
d	x	x	dr-	-dz	x		--	
k	x	x	kl-	-ks, -kt	x			
g			gw-		x		--	--
m		x	--		x			
n	x	x	--	-nt(s) -nd, -nz	x	x		
ŋ		-	--		-		--	--
l	x	x	--	-lt, -ld, -lz	x	x	pl-, sl-, kl-, spl-	--
f	x	x		-ft, -fs	x			
v		x	--		x		--	
θ							--	
ð							--	--
s	x	x		-st(s)	x		--	
z	x	x		-zd	x		--	
ʃ		x					--	
ʒ			--				--	--
h	-	x	--	--	x	-	--	--
tʃ		x	--		x		--	
dʒ			--		x		--	
w	-		--	--		-	kw-	--
ʍ(hw)	-		--	--		-	--	--
r	-		--	--	x	-	br-, tr-, dr-, kr-, gr-, str-	--
j	-		--	--	x	-	--	--
i			x				x	
ɪ			x				x	
e								
ɛ			x					
æ			x					
ɑ								
ɔ								
o			x				x	
ʊ								
u								
ʌ								
ɝ(ɜ)								
ɚ(ə)			x				x	
ə			x					
aɪ							x	
ɑʊ								
ɔɪ								
ju								

group *foyer* is the only generally familiar word. It is in words with [ɚ(ə)] that the adjoining vowel may not be in a separate syllable, but there is a strong likelihood that it will be.

[ɔɪ] follows [i] in *geoid,* [ɪ] in the variants *thyreoid* and *chorioid,* and [o] in *zooid.* Only in *hyoid* does [ɔɪ] stand next to another diphthong. It has already been remarked that in such a word as *asteroid* the sequence may be [-ɚ ɔɪ-] rather than [-rɔɪ-]. [ɔɪ] following vowel *r* is probably better exemplified by *sphereoid.*

The foregoing observations are summarized by Table I, in which an "x" or consonant-cluster transcription indicates the occurrence of the combination in point. A dash means that the combination called for cannot occur, as for example, [ɔɪ] cannot precede [m] in an initial cluster because [m] does not begin any initial cluster. The columnar headings "SS" and "DS" mean 'same syllable' and 'different syllable,' respectively.

In addition, it has been noted from a somewhat different point of departure that [ɔɪ] at the beginning and the end of words precedes and succeeds sounds as follows:

(1) Initial [ɔɪ] precedes [t] in *oitava,* [m] in *oime,* [n] in *ointment,* [l] in *oil,* [s] in *oisivity* and *oyster,* and [ɚ] in *oyer* ['ojɚ, 'ɔɪɚ].

(2) Final [ɔɪ] follows [p], as in *charpoy,* [b], as in *hautboy,* [t] in *toy,* [k], as in *coy,* [m] in *shamoy,* [n] in *annoy,* [l], as in *deploy,* [f] in *foy,* [v], as in *envoy,* [s] in *soy,* [z] in *borzoi,* [dʒ], as in *enjoy,* [h], as in *hoy,* and most frequently [r], as in *corduroy* and *destroy.*

From the data available it is not possible to draw a conclusion as to the comparative tendency of [ɔɪ] to combine with other sounds, but these data do seem to indicate that [ɔɪ], in spite of its relative rare occurrence, both precedes and follows a variety of sounds alone and in cluster.

Reference to the part of Table I dealing with consonants indicates that there is a greater tendency for [ɔɪ] to appear beside a consonant in the same syllable than in a different one. This conclusion is reinforced when it is recalled how many times the word "few" has been used to characterize those groups in which [ɔɪ] precedes a consonant in the following syllable. One exception to this tendency is found in the combinations with [m].

The table also makes clear that [ɔɪ] follows consonants with more regularity than it precedes them.

Obviously there are relatively many combinations with alveolars, particularly [l], [n], [d], [t]. It is suggested, however, that this may well be a function of the prevalence of alveolars rather than of any special affinity between them and [ɔɪ].

Recalling the number of words containing *-oid* and observing that in large part these are scientific terms, there appears to be reason to suspect that as a vocabulary emphasizes science the comparative occurrence of [ɔɪ] + [d] will increase.

[ɔɪ] does not combine with [ŋ], [θ], [ð], [ʒ], [ʍ(hw)], and for all practical purposes, not with [ʃ] or [j]. Nor does it occur after a final cluster.

The juncture of [ɔɪ] with vowels is limited in number and is usually with unstressed vowels.

Initial and final [ɔɪ], especially initial [ɔɪ], occur before and after, respectively, a limited, scattered group of consonants.

CONDITIONS AFFECTING THE COMMUNICATION OF CONTROVERSIAL STATEMENTS IN CONNECTED DISCOURSE: FORMS OF PRESENTATION AND THE POLITICAL FRAME OF REFERENCE OF THE LISTENER[1]

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IN 1941 Edwards reported a study in which a short speech containing statements which were favorable to the New Deal and statements which were unfavorable to the New Deal was presented to college students, who were then given a recognition test to determine how many of the statements they could correctly identify. The listeners were also asked to indicate their attitude toward the New Deal on a seven-point scale, on the basis of which three small—forty eight in each—but distinctively different groups of subjects were chosen: (1) favorable to the New Deal, (2) neutral, (3) unfavorable. It was found that pro-New Deal listeners achieved higher recognition scores on pro-New Deal statements than did anti-New Deal listeners, and anti-New Deal listeners achieved higher recognition scores on anti-New Deal statements than did pro-New Deal listeners. The trends were consistent and statistically significant. Edwards thought these outcomes to be consistent with the general rule "that experiences which are in harmony with an existing frame of reference (organization of desires, attitudes, wishes, values, etc., within an individual as a result of learning) will tend to be learned and remembered better than experiences which are in conflict with the same frame of reference."[2]

The purpose of the present article is to report the outcomes of a series of three experiments incorporating the same general features of design found in Edwards' study. Our objectives were to test the consistency of his outcomes, to study the effects of various forms of presentation, and to make sub-group comparisons.

Study No. 1 was carried out in the fall of 1951, at a time when charges of corruption against the national administration were prominently featured in the press. Thirty statements favorable to the Fair Deal (Truman administration) and thirty statements unfavorable to the Fair Deal were presented orally via recording to 476 students at the University of Minnesota in groups ranging in size from 20 to 50. The subjects were enrolled in Fundamentals of Speech. They were told that the speech was being presented as a listening exercise, that they would be tested on their ability to remember what they had heard, that their scores would not affect their course grades, that the scores would be posted with identification numbers (not with names).

One half of the subjects heard a

[1] The studies reported here are part of a larger program of investigation carried out at the University of Minnesota under sponsorship of the Office of Naval Research (Contract Number N8 onr-66216).

[2] Edwards, A. L. "Political Frames of Reference as a Factor Influencing Recognition," The Journal of Abnormal and Social Psychology, Vol. 36, No. 1, January, 1941, 34-50.

"mixed" form of presentation in which the pro and anti statements were mingled in random fashion. The remaining subjects heard a "separated" form in which the pro and anti statements were not mingled. Among the latter, one half heard the pro statements first, and the other half heard the anti statements first. It was our expectation that the "mixed" form would produce a more marked difference between the pro-Fair Deal subjects and the anti-Fair Deal subjects than the "separated" form. This expectation was based on the assumption that the "mixed" form would be more confusing than the "separated" form and thus aggravate the projective tendencies of the biased listeners. The two speeches were recorded by a skillful speaker who was instructed to maintain the same style of delivery in both forms of presentation.

Immediately after hearing the speech the listeners were asked to indicate their attitude toward the Truman administration on a seven point scale, and were then given a sixty-item multiple choice test in which they were asked to identify the statements made by the speaker.

A summary of outcomes for the total group is presented in Table I. It will be noted that a majority of the subjects indicated an unfavorable attitude toward the Fair Deal. Only two subjects indicated a "very favorable" attitude; they were included in the "favorable" group for purposes of tabulation. The table also shows how successful the various attitude groups were in correctly identifying the pro and anti Fair Deal statements presented in the speech. For example, 54 subjects—30 men and 24 women—indicated that they were very unfavorable to the Fair Deal. This group scored a total of 1235 correct identifications of pro-Fair Deal statements, as against a total of 1331 for anti-Fair Deal statements, or 76% of the total possible score as against 82%, with a difference of 6%. In the table as a whole, the differences, though small percentage-wise, take the expected direction, and are larger at the ends of the attitude scale than they are in the middle.

The theoretical expectation in this study was that the individual listener would identify more of the speech material which conformed to his political attitude than he would of the material which ran contrary to it. This suggested a convenient and for our purposes an adequate basis of examining the trends in the data and testing their statistical significance. First it was necessary to find out if the thirty anti-Fair Deal statements and the thirty pro-Fair Deal statements had approximately equal rhetorical strength. This was done by making up through random selection a composite group of subjects in which favorable and unfavorable attitudes were balanced, and comparing the frequency with which the pro and anti statements were correctly identified. The composition of the group is shown in Table II, and the outcome indicate that both classes of items were correctly identified about 79% of the time. With this assurance that the pro and anti statements were of about equal rhetorical strength, we then classified each listener according to whether or not he showed a preponderance of correct identifications of items conforming to his bias. For example, if a pro-Fair Deal listener identified more pro-Fair Deal than anti-Fair Deal statements he was tabulated in the "plus" column, if the reverse was true he was put in the "minus" column, if he identified an equal number of pro and anti state-

TABLE I
CORRECT RECOGNITION OF PRO AND ANTI ADMINISTRATION STATEMENTS IN RELATION TO ATTITUDES TOWARD THE ADMINISTRATION.

Attitudes	N	Correct Recognition of Pro Statements f	%	Correct Recognition of Anti Statements f	%	Differences %
2 Favorable	57	1363	80	1278	75	5
3 Slightly Favorable	67	1597	79	1563	78	1
4 Neutral	54	1242	77	1276	79	2
5 Slightly Unfavorable	94	2180	77	2200	78	1
6 Unfavorable	150	3450	77	3614	80	3
7 Very Unfavorable	54	1235	76	1331	82	6
	476					

TABLE II
COMPARATIVE VALENCE OF PRO-ADMINISTRATION AND ANTI-ADMINISTRATION STATEMENTS

Attitudes	N Men	N Women		Correct Recognition of Pro Statements	Correct Recognition of Anti Statements
Very favorable	1	1			
Favorable	32	23			
Slightly favorable	37	27			
	70	51	(121)	2889	2841
Slightly unfavorable	37	27			
Unfavorable	32	23			
Very unfavorable	1	1			
	70	51	(121)	2814	2916
				5703 (79%)	5757 (79%)

ments he was placed in the zero column. The skewness of the distribution in the "plus" direction then became the critical test of the conformity of the outcomes to theoretical expectations.

Three obtained distributions (o) are given in Table III, along with the expected chance distributions (e). Chi-square analysis shows significant skewness for the group which heard the mixed form of presentation and for the total group. The distribution for the group which heard the separated form of presentation is skewed in the expected direction but not significantly. Direct comparison of these two sub-groups yielded a chi-square value with probability falling between 2% and 1%.

The significant skewness of the total distribution added confirmation to Edwards' results. Expectations as regards the mixed and separated forms of presentation were only partially realized. A significant difference in skewness of distribution appeared, as was expected, but the mixing of statements did not increase the difficulty of identifying statements. Both forms of presentation yielded a total score of 78% correct identifications.

Study No. 2. Another experiment was run in the fall of 1952, one week before the election, chiefly for the purpose of confirming the difference found in the first experiment between the "mixed" and "separated" forms of presentation. Procedures in Study No. 2 conformed in all essential respects to those of Study No. 1. Sixty new statements were formulated. Thirty of the statements were favorable to the Republicans: fifteen were pro-Eisenhower, and fifteen were

TABLE III

STUDY NO. 1. PREPONDERANCE: DISTRIBUTION AND ANALYSIS.

Form of Presentation	Listeners	N		Plus	Zero	Minus	Chi-square
Mixed	Democrats & Republicans	218	(o)	123	28	67	
			(e)	95	28	95	16.5052
Separated	Democrats & Republicans	204	(o)	102	17	85	
			(e)	94	17	93	1.5454
Mixed and Separated	Democrats & Republicans	422	(o)	225	45	152	
			(e)	188.5	45	188.5	14.1352

N = 2 P 5% = 5.991 P 1% = 9.210

anti-Stevenson. Thirty of the statements were favorable to the Democrats: fifteen were pro-Stevenson, and fifteen were anti-Eisenhower. A new group of listeners were used; as in Study No. 1 they were students enrolled in Fundamentals of Speech at the University of Minnesota. One half the subjects heard a "mixed" form of presentation in which the pro and anti statements were randomly mingled, and the other half heard the "separated" form in which the pro and anti statements were not mingled. After hearing the speech the listeners were asked to indicate which presidential candidate they would vote for, if they were eligible to vote, and were given a sixty-item multiple choice recognition test.

Analysis of the relative rhetorical strength of the pro-Republican and pro-Democrat items showed a 4% advantage for the latter which ran consistently through the sub-groups in the test population. A blanket correction was employed to eliminate this discrepancy; two points being subtracted from each listener's score on pro-Democrat items.

Plus, zero, and minus values were tabulated, as in Study No. 1, and are presented in Table IV. All three of the distributions are skewed in the expected direction, but the chi-square value for the mixed form of presentation is not

TABLE IV

STUDY NO. 2. PREPONDERANCE: DISTRIBUTION AND ANALYSIS.

Form of Presentation	Listeners	N		Plus	Zero	Minus	Chi-square
Mixed	Democrats & Republicans	174	(o)	91	17	66	
			(e)	78.5	17	78.5	3.9808
Separated	Democrats & Republicans	192	(o)	109	28	55	
			(e)	82	28	82	17.7804
Mixed and Separated	Democrats & Republicans	366	(o)	200	45	121	
			(e)	160.5	45	160.5	19.4424

N = 2 P 5% = 5.991 P 1% = 9.210

TABLE V

STUDIES NOS. 1 AND 2. PREPONDERANCE: DISTRIBUTION AND ANALYSIS.

Form of Presentation	Listeners	N		Plus	Zero	Minus	Chi-square
Mixed	Democrats & Republicans	392	(o)	214	45	133	
			(e)	173.5	45	173.5	18.9078
Separated	Democrats & Republicans	396	(o)	211	45	140	
			(e)	175.5	45	175.5	14.3618

N = 2 P 5% = 5.991 P 1% = 9.210

significant. Direct comparison of the distributions for the mixed and separated forms did not yield a significant chi-square value. Combined data from Studies Nos. 1 and 2 for the two forms of presentation are given in Table V. The two distributions are markedly similar, and both show significant skewness in the expected direction. Thus, Study No. 2 again showed the same sort of relationship between recognition scores and listeners' attitudes as was found in Study No. 1 and by Edwards, but did not confirm the difference between mixed and separated forms of presentation which was found in Study No. 1.

Study No. 3. The statements presented to the listeners in Studies Nos. 1 and 2 referred to contemporary and recent events and conditions, and no doubt similar statements had reached some of the subjects via newspapers, magazines, television, radio, and other sources. If we assume that the partisan listener is exposed more frequently to political commentary which conforms to his bias than to criticism which conflicts with it, it seems evident that familiarity could have a positive influence on the outcome of such studies. The assumption receives some support in a study of the press and radio in a presidential campaign in which it was noted "that the people tend to seek out political views similar to their own."[3] Furthermore, selected exposure to political opinions may have been relatively strong in the case at hand, for the subjects in Studies Nos. 1 and 2 were attending a university located in a metropolitan area, and many of them were living at home with their parents. A positive relationship between the political views of college students and their parents has been found.[4]

Study No. 3 was carried out in a manner intended to reduce the effect of familiarity as much as possible. Sixty statements were formulated about the Republican administrations for the years 1920 to 1932; thirty being favorable and thirty being unfavorable to those administrations. The statements were historically factual and specific. There were two forms of presentation; a "proactive" form in which the section of the speech favorable to the administration was introduced with a laudatory paragraph, and the section which was unfavorable was introduced with a condemnatory paragraph; and a "retroactive" form in which the same paragraphs were used as concluding statements. Our expectation was that the proactive form to a greater extent than the retroactive form would excite bias, thus aggravating the tendency of the listener to recognize more readily statements conforming to his frame of reference than statements conflicting with it. The study was carried out in the spring of 1952, about six months before the November election. After hearing the speech the listeners were asked to indicate which party they hoped would win the fall election, and were given a sixty-item multiple-choice recognition test. The subjects were students in the Fundamentals of Speech course at the University of Minnesota, few if any of them had been either in Study Nos. 1 or 2. Forty-six subjects drawn from the same student population but not included in the main experimental group were given the recognition test without having heard the speech. These yielded an average score of 17.8. Since each

[3] Lazarsfeld, Paul F., Berelson, Bernard, and Gaudet, Hazel. *The People's Choice* (New York, 1948), p. 129.

[4] Bird, Charles. *Social Psychology* (New York, 1940), p. 177.

item in the test gave four options and since the subjects checked all items, this result is only 2.8 points above the average to be expected by chance, suggesting very little familiarity with the statements in the speech.

A test of the relative rhetorical strength of the pro-Republican and pro-Democrat items was made, as in the other two studies, and a consistent difference was found in favor of the latter. A blanket correction was used to correct this discrepancy; four points being subtracted from each listener's score on pro-Democrat items. The distributions for Study No. 3 are given in Table VI. All are skewed significantly in the expected direction. The trend appears a little stronger for the retroactive form than for the proactive form, but direct comparison of the two distributions did not yield a significant chi-square value. Thus, the expected difference between the two forms did not appear. Here, again, as in Studies Nos. 1 and 2 and in Edwards' study, the subjects on the whole tend to identify statements which conform to their frame of reference more frequently than statements which conflict with it.

TABLE VI

STUDY NO. 3. PREPONDERANCE: DISTRIBUTION AND ANALYSIS.

Forms of Presentation	Listeners	N		Plus	Zero	Minus	Chi-square
Proactive	Democrats & Republicans	214	(o)	120	24	70	
			(e)	95	24	95	13.1578
Retroactive	Democrats & Republicans	243	(o)	143	24	76	
			(e)	109.5	24	109.5	20.4992
Proactive & Retroactive	Democrats & Republicans	457	(o)	263	48	146	
			(e)	204.5	48	204.5	33.4694

N = 2 P 5% = 5.991 P 1% = 9.210

Sub-Group Analysis. The three studies give a total of 1245 subjects who were identified as being pro-Democrat or pro-Republican at the time they were given the recognition test. This accumulation of data permitted some comparisons of sub-groups with sizable N's, which are presented in Table VII. There appears to be no difference between men and women, but a striking difference will be noted as between Republicans and Democrats. The former show strong and consistent skewness in the expected direction. The latter show little skewness in Studies Nos. 1 and 2, and in Study No. 3 the distribution is skewed significantly in the minus direction. Possibly this unexpected reversal of outcomes was due in some way to the rather crude correction of pro-Democrat items which was employed. In any event, it was thought desirable to make a direct comparison of the Republicans and Democrats in Study No. 3, the results of which are given in Table VIII. It will be noted that while both groups show a similar tendency, the trend is stronger among the Republicans than among the Democrats. This, plus the fact that the Democrats showed only a weak trend in Study No. 1, in which no correction was used, indicates that the two party groups did in fact react differently to the speeches.

CONCLUSIONS

1. Generally, the subjects in these experiments show the same tendency which was indicated in Edwards' study; they show greater facility in the rec-

TABLE VII

SUB-GROUP ANALYSIS. COMBINED DATA FROM STUDIES NOS. 1, 2, & 3:

Study	N		Plus	Zero	Minus	Chi-square
	Republican Women					
No. 1	159		87	13	59	
No. 2	123		82	14	27	
No. 3	119		85	14	20	
	401	(o)	254	41	106	
		(e)	180	41	180	60.8444
	Republican Men					
No. 1	139		76	20	43	
No. 2	86		50	13	23	
No. 3	204		136	18	50	
	429	(o)	262	51	116	
		(e)	189	51	189	56.3916
	Democrat Women					
No. 1	51		28	2	21	
No. 2	74		31	9	34	
No. 3	46		14	3	29	
	171	(o)	73	14	84	
		(e)	78.5	14	78.5	.7708
	Democrat Men					
No. 1	73		34	10	29	
No. 2	83		37	9	37	
No. 3	88		28	13	47	
	244	(o)	99	32	113	
		(e)	106	32	106	.9246
	All Subjects					
	1245	(o)	688	138	419	
		(e)	553.5	138	553.5	65.3668

N = 2 P 5% = 5.991 P 1% = 9.210

TABLE VIII

STUDY NO. 3. COMPARISON OF DEMOCRATS AND REPUBLICANS.

	N	Recognized More Pro-Republican Items	Equal Number	Recognized More Pro-Democrat Items
Republicans	323	221	32	70
Democrats	134	76	16	42

N = 2 P 5% = 5.991 P 1% = 9.210 chi-square = 6.3383

ognition of statements which conform to their bias than statements running counter to their bias.

2. In one experiment in which relatively unfamiliar material was presented to the listeners both the Democrats and Republicans recognized more pro-Republican than pro-Democrat statements, but the trend was significantly stronger among the Republicans.

3. The trend toward "biased" listening was equally strong among men and women.

4. The trend toward "biased" listening was not affected by the forms of presentation employed: mixed statements versus separated statements, proactive form versus retroactive form.

5. The trend toward "biased" listening was strong and consistent among the Republican subjects; it was neither strong nor consistent among the Democrats. No ready explanation for this

unexpected outcome occurs to these writers. The data gathered in the fall of 1951 (Table I) indicated a strong anti-Democrat tendency in the test population, not only in numerical division but also in strength of attitude. If the latter persisted through out the following year the difference in listening behavior shown by the Republicans and Democrats may have been due to difference in strength of motivation or partisan feeling.

THE RELATIVE EFFECTIVENESS OF SEVERAL DIFFERENT SOUND TRACKS USED ON AN ANIMATED FILM ON ELEMENTARY METEOROLOGY

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SINCE the advent of television, researchers are becoming increasingly concerned with the relative impact on our senses of the audio and video portions of telecasts. With the possibility of several new educational television stations being put on the air soon this research becomes increasingly important. If educational television is to succeed, known educational principles and yet-to-be discovered principles must be applied to make the programing from these stations as efficient and as effective as possible. Few stations at the present time telecasting educational programs are equipped to make film recordings (kinescopes or actual live filming) of their educational programs. With this lack of film recordings and with the actual telecasts being too transitory for controlled experimentation it would seem probable that early research in this field will have to be accomplished with educational films. The results of such experimentation using films instead of actual telecasts would seem as readily applicable to televiewing as to film viewing because of the many similarities between the two media of mass communication. With large screen-projection viewing of telecasts now being a reality even the viewing conditions of both television and film are becoming similar. The study reported was done with an educational film, but it is felt by the authors that the results are just as pertinent to the field of television. It was the general purpose of the study to see if the sound track of an extant animated film on elementary meteorology could be improved in teaching efficiency by modifying it so as to include various hypotheses commonly held as to improved language intelligibility.

The specific purposes of the study being reported were, holding the video element of the film constant, to compare the effectiveness of

(1) three different modifications of the aforementioned original sound track as follows:

(a) increasing the number of personal pronouns, using active rather than passive voice, shortening sentences, employing verbal transitions and simpler words.

(b) increasing the number of definitions, analogies, explanations, and repetitions.

(c) reducing the number of words and details, simplifying the language, and directing attention to the video element of the film.

Experimental Design: An existing fourteen minute film on meteorology was modified so that while the picture element remained the same in five successive versions, the commentary was different in each. Different versions were shown to randomly selected class sections of Air ROTC students in connection with their regular study of meteorology. Learning from film was measured by two tests administered immediately

*The research on which this article is based was conducted under Contract N6 ONR-269, Task Order VII with the Special Devices Center of the Office of Naval Research. The research was conducted by H. E. Nelson, Associate Professor of Speech, and A. W. VanderMeer, Professor of Education, working in conjunction with the Instructional Film Research Program at The Pennsylvania State College.

after the film showings. The entire experimental procedure was conducted in the regular class meeting place within the usual one hundred minute class period.

The Subjects: The subjects were male students at The Pennsylvania State College who had been accepted for Air Reserve Officer Training and were in their fourth semester in that course. Nearly all were in the last half of their sophomore year in college, although a few were in the first semester of their junior year.

All of the Schools and practically all of the Departments of the College were represented in the experimental groups, with science and engineering students outnumbering others by roughly three to two.

Since The Pennsylvania State College operates on a selective admission policy, and since there are more applicants for Air ROTC than can be accepted, it is natural to assume that the subjects used in this study would be more intelligent than the average of American males. That this is true is confirmed by the fact that the mean American Council College Aptitude scores for the various groups ranged from 119 to 134.

Ten sections involving 529 men were scheduled to participate in the study. Due to absences and tardiness this number was reduced slightly. Subsequently it was decided to equate groups in terms of scores on the American Council College Aptitude Test and to eliminate from consideration those men who had previously taken college work in meteorology. This resulted in a further reduction of numbers until finally the data presented herein is based upon 191 cases.

Curricular Content of Experiment: The experiment was conducted at the time when the subject of meteorology would normally be studied by the trainees in their Air ROTC curriculum. The films were shown and tests administered during the first of three double (100 minute) periods to be devoted to the subject. The remaining two periods were devoted to regular instruction in meteorology, thus rendering it unfeasible to administer delayed recall tests.

The Film Versions: Five versions of a previously prepared film on meteorology were employed. All had the same pictorial content, but their commentaries were systematically varied. Table I shows the more objectively identifiable elements of difference among the commentaries.

It is obvious from an examination of Table I that some of the commentaries were varied in a number of ways rather than in a single way, and that these variations were sometimes of degree rather than kind.

Version 1 was the original film narrated by a professional narrator, employing an optical sound track.

Version 2 employed the same script as Version 1, but was narrated by a meteorologist and a magnetic sound track was used. An effort was made to keep pacing and timing the same in both versions, but unquestionably differences in this respect did creep in.

Version 3 emphasized (a) personalization of commentary by the wide use of such words as we, our, us, and you, (b) simpler language by means of shorter sentences and a relatively lower frequency of difficult words,[1] and (c) smoother reading commentary through the use of a relatively larger number of transitional words and phrases such as "thus," "on the other hand," "therefore," and/or "this . . ."

Version 4 was intended to test the efficacy of repetitiousness and of the employment of common similes and vivid adjectives such as "(clouds) like

[1] Defined as a percentage of word count outside the Dale list of 3,000 common words.

TABLE I
CHARACTERISTICS OF COMMENTARIES ON EXPERIMENTAL FILMS.

Version	Narrator	Sound Track	Number of Words	Number of Personal Pronouns	It, Its, Itself	Second Person Our, We, Us, You	Number of Sentences	Average Sentence Length	Frequency Outside Dale 3,000	% Word Count Outside Dale 3,000	Transitional Phrases and Words (Now, also, for this reason)	Repetitions Within Sequences*	Analogies, similes, "Picture Adjectives"—fluffy, billowing, etc.
1	Professional	Optical	1368	22	13	5	89	15.4	221	16.1	16	0	0
2	Meteorologist	Magnetic	1368	22	13	5	89	15.4	221	16.1	16	0	0
3	Meteorologist	Magnetic	1470	52	22	25	101	14.6	210	14.3	37	0	0
4	Meteorologist	Magnetic	1760	27	15	8	109	16.1	292	16.6	23	8	4
5	Meteorologist	Magnetic	1278	25	11	14	75	17.0	174	13.6	25	0	7

*Repetitions like "This gradual lifting of warm air" are not included because they are included under transitional words and phrases.

billowing smoke from a locomotive" and "*feathery* cirrostratus clouds." Actually, however, this version also contained more words per minute, a relatively large number of difficult words, and relatively long sentences. At the same time, a not inconsiderable number of personalizing words and transitional words and phrases were used.

Version 5 attempted to draw attention to the pictorial element by using a minimum of words in the commentary, by direct reference to the screen image, and by a relatively frequent use of similes and vivid descriptive words. A low percentage of the word count in this version was in difficult words, but the average sentence length was high. Relative to other versions, an average rather than low number of transitional words or phrases and personalized words were employed.

A final comparison was made between Version 3 without the pictorial element (the sound track alone) and the complete Version 3, picture and sound.

The magnetic recordings were made in a well equipped motion picture studio in which the narrator was in a soundproof room removed from the motion picture projector. The signal from the narrator's microphone was monitored through the studio sound recording equipment and recorded on a 100 mil track by a Bell and Howell model 202 magnetic sound track projector.

In spite of the procedure for sound recording described above, it was not possible to achieve as high quality recording on the magnetic track as had been accomplished with the optical track. The extent to which this difference obscured the consciously introduced variables is unknown.

The Tests: Two tests were employed. The first, hereafter referred to as Test A, was a sixty-four item multiple choice test of the conventional type. The second was a thirty-four item multiple choice test, hereafter referred to as Test B, in which the body of each item was based on a line diagram. The diagrams, of which there were thirteen, were produced to be as nearly a direct reproduction from the film as it was possible to achieve with line drawings.

The first thirty-four items of Test B were duplicated, insofar as possible in purely verbal terms, in the first thirty-four items of Test A. The body of each item included verbal statements of those elements of the appropriate diagram

that seemed necessary, and the alternatives were worded and arranged identically.

Table II presents data on the reliabilities of the tests as determined by the Kuder-Richardson Formula No. 20. It will be observed that the diagrammatic and verbal tests did not differ greatly with respect to reliability.

Test A was intended to cover all the material presented in the film. Test B, on the other hand, sampled the information in the film, because some of it could not be diagrammed and because diagrams used in the test might provide the data for answering certain other questions that might be asked. Accordingly, Test A, the completely verbal test, was always administered first in order to minimize the presumed learning from the test itself.

Results. Two comparisons among film versions are possible: (a) Comparisons among commentaries; (b) Entire film versus commentary alone.

These two comparisons will be discussed in order.

Table III shows that the differences among the various commentary versions were small and generally not statistically significant. The analysis of variance produced F ratios indicating statistically significant differences only in the case of the total Test A and Part 2 of Test A.

The relative contribution of the pictorial element and the sound track may be inferred from data presented in Table IV. The best commentary accompanied by the picture was consistently superior to the best commentary played alone through the sound system of the motion picture projector.

An analysis of the commentary variations led to the following hypotheses:

a. Ideas appearing early in the pas-

TABLE II
RELIABILITY OF CRITERION TESTS.

Film Version Group	Total Test	Test A Items 35-64	Items 1-34	Test B (34 Items)
1	.89	.79	.81	.77
2	.91	.83	.83	.84
3	.83	.76	.70	.78
4	.86	.78	.75	.83
5	.86	.82	.71	.69
Total Population	.89	.82	.78	.81

TABLE III
ADJUSTED MEAN SCORES[1] ON TESTS BASED ON FILMS WITH DIFFERENT COMMENTARIES.

Commentary Versions	N	Test A (Verbal) Part 1 Items 1-34	Part 2 Items 35-64	Total Test (64 Items)	Test B Diagrammatic (34 Items)
Non-film[2]	99			25.98	14.72
1[3]	35	25.87	23.65	49.52	26.73
2	48	23.04	19.64*	42.68*	23.78
3	39	24.43	21.30*	45.73*	25.11
4	42	24.30	20.69	44.97	25.46
5	36	23.53	19.88	43.41	24.86
F Ratios		1.85	4.41**	3.43**	1.92

[1] Adjusted in terms of American Council on Education College Aptitude Eximination.
[2] Unadjusted means.
[3] Any comparison between Version 1 and Versions 2 to 5 is impaired because of the difference in the quality of the sound tracks. Version 1 had an optical sound track, Versions 2-5 had magnetic sound tracks.
*The significance of this difference between Versions 2 and 3 is at the 10 per cent level.
**Significant at the 1 per cent level.

sage are learned by more trainees than those appearing later.

b. The use of words in unusual or ambiguous meanings is detrimental to learning. For example "Cirrus clouds *top* the line of cumulus clouds" is not as good as "above the cumulus clouds are . . . cirrus clouds."

These are, of course, only hypotheses, and further research might well be based upon them.

The foregoing comparisons were based upon Test B, the diagrammatic test, only. An analysis of Test A, the purely verbal test, reveals similar differences, but brings to light some items in which differences may be explained in terms of one commentary passage using language identical to that used in the question while another commentary version may use slightly different words.

TABLE IV

ADJUSTED MEAN SCORES ON TESTS BASED ON FILMS WHEN PRESENTED WITH AND WITHOUT THE PICTORIAL ELEMENT.

Versions	Number	Test A			Test B
		Part 1 (Items 1-34)	Part 2 (Items 35-64)	Total (64 Items)	(34 Items)
Picture Plus Best Commentary	39	24.43	21.30	45.73	25.11
Best Commentary Without Picture	36	20.13	18.71	38.83	20.78
Difference		4.30	2.59	6.90	4.33
Significance of Difference		1%	1%	1%	1%
Percentage Gain Attributable to Pictorial Element		21	14	18	21

DIFFERENCES BETWEEN VERBAL AND DIAGRAMMATIC TESTS

Some data on the relative value of tests employing diagrams and purely verbal tests are provided by relating scores on Tests A and B to equating test scores and by comparing commentary versions in terms of differences in proportions passing presumably equivalent items on Test A and Test B.

Table V shows mean scores on various criteria for those trainees in each group who showed the greatest difference between their scores on Tests A and B.

Two tendencies are notable from Table V:

1. Those trainees who scored higher on the diagrammatic test than they did on the purely verbal test had considerably higher scores on the quantitative factors of the American Council Psychological Examination, whereas their scores on the verbal factors were only slightly higher.

2. Differences in scores on the two test versions were greater when the higher score was earned on the diagrammatic test.

Correlations between the tests ranged from .73 to .87 with a median of .83. Analysis of variance reveals that differences in individual scores on the two film tests are more likely to be due to chance factors than to individual differences between subjects in terms of their reactions to different types of tests.

If trainees because of differences in their various mental ability factors react differently to diagrammatic tests than they do to purely verbal tests, then tests measuring various mental abilities should correlate differently with the two types of film tests. Table VI reports correlations between Q and L Scores on the American Council Psychologi-

TABLE V

COMPARISON OF MENTAL ABILITY FACTORS AND GRADE POINT AVERAGE OF TRAINEES WHOSE SCORES ON DIAGRAMMATIC AND VERBAL TESTS DIFFER MOST WIDELY.

Commentary Versions	Number	American Council on Education Psychological Exam: Quantitative Score A B	B A	Language Score A B	B A	Total Score A B	B A	EPA A B	B A	Mean Difference A B	B A
1	9	50.67	55.00	74.11	79.33	124.78	134.33	1.24	1.77	3.11	4.56
2	12	47.33	53.42	66.75	66.08	114.08	119.50	1.45	1.33	2.92	4.17
3	10	53.20	56.80	70.40	67.40	123.60	124.20	1.15	1.26	1.32	5.00
4	10	49.20	56.90	62.40	75.40	116.60	132.30	1.30	1.69	3.10	5.20
5	7	56.00	56.00	75.14	69.00	131.14	125.00	1.43	1.37	1.86	4.57
All Versions	48	50.83	55.52	69.21	71.21	121.08	126.73	1.31	1.48	2.51	4.69

cal Examination and the diagrammatic and the verbal tests. It will be noted that correlations between the diagrammatic film test and the Quantitative scores were consistently higher than between the Quantitative scores and the Verbal Film Test Scores. These differences are not great, but indicate the necessity for further study to establish the relationships that may exist between the trainee's special mental abilities and his reaction to various forms of tests.

Results:

1. All of the modified commentaries were consistently superior to the original commentary although these differences were not statistically significant. The best of these was the one which had the shortest sentences, the most personalizing pronouns.

2. Differences in proportions passing items indicate that at least limited use of the following commentary characteristics may increase effectiveness in communicating facts through the audio element of the film.

a. Technical terminology and numerical data is learned best when it is presented in both pictorial and sound elements.

b. Remarks in the commentary directing attention to specific elements of the pictorial aspect of the film.

c. Repetition of facts presented in series.

d. Use of vivid descriptive terms.

3. Those trainees who merely heard the best commentary without seeing the pictures learned about 80 per cent of the facts that were learned by trainees who saw the pictures and heard the commentary.

4. Test items based upon diagrams did not produce significantly higher scores than purely verbal items, but there is some evidence that the scores on purely verbal test items may underestimate trainee achievement.

TABLE VI

CORRELATIONS BETWEEN AMERICAN COUNCIL ON EDUCATION TESTS AND FILM TESTS.

Film Tests	Trainees Seeing Complete Films: American Council on Education Psychological Exam			Trainees Hearing Sound Track Without Seeing Film: American Council on Education		
	Language	Quantitative	Total	Language	Quantitative	Total
Verbal	.31	.21	.31	.35	—.04	.24
Diagrammatic	.34	.32	.39	.44	—.05	.31

Conclusions

The following conclusions are supported by the data:

1. The commentary of the sound film may contain a relatively large proportion of the ideas that the film was intended to communicate. Rearranging the wording and reorganizing the commentary is likely to produce only small changes in the over-all learning resulting from the film so long as the basic idea content is retained.

2. The proportion of learning that is attributable solely to listening to the commentary is significantly smaller than that which is attributable to viewing the film with both picture and sound.

3. There is some evidence that test questions based on line diagrams from animated films produce higher scores than would result on a test consisting of purely verbal items. This difference is too small to be statistically significant, but further research in this area is promising.

A STUDY OF THE FACTORS CONSIDERED BY STUDENTS IN EVALUATING PUBLIC DISCUSSIONS

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I. Introduction

A. Origin and Significance of Problem. Both students and adults from time to time make value judgments of the public discussions that they hear in person, by radio, or by television. These evaluations determine the number of listeners or viewers, the outcome of school contests, the public relations value of the performance, and ultimately the amount of influence of the program. Knowledge concerning the relative strength of the factors influencing value judgments could assist round-table directors in increasing the acceptability of the projects.

A second area of significance is that, although many educational experiments secure data through rating devices, not much is known concerning the mental processes of the students who mark the scales.

B. Analysis of Problem. The problem has these divisions: (1) determining one over-all and five specific reactions of student listeners to fourteen recorded discussions; (2) applying statistical procedures in studying the relationships among these six sets of data.

C. Purpose of Study. The purposes of the study are as follows:

1. To determine the extent to which each of five specific factors is discrete.

2. To determine the extent to which each of the specific factors contributes to the over-all evaluation.

3. To suggest possible reasons for the findings.

D. Methodology. Tape recordings prepared by fourteen colleges for the First National Contest in Public Discussion provided the basis for this experiment. Each of these recordings was twenty-five minutes in length, consisted of four speakers talking discontinuously, and dealt with the national question for 1951-52, the improvement of moral and ethical conduct. As public discussions, they were expected to present sound information and penetrating thought in a well-organized, interesting, and skillfully delivered program.

The student raters belonged to ten speech classes at the Chicago Undergraduate Division, University of Illinois. About eighty per cent male, they were freshmen and sophomores nearing the completion of their first semester of work in the beginning college class in public speaking. They were distributed fairly equally among the colleges of Commerce, Engineering, and Liberal Arts and Sciences, and a lesser number came from Physical Education and Teacher Training. About three months earlier they had had a unit in public discussion, but they had received no special practice in rating. No reason exists for believing that these groups differed in any significant way from similar university classes.

The rating device, which the writer constructed, consists of introductory explanation and six linear measures of the usual type. These scales, all on a single mimeographed page, purportedly measure (1) over-all response and (2) specific reactions to (a) amount, quality, and relevance of the material, (b) orig-

inality and accuracy of thought, (c) organization, (d) interestingness, and (e) delivery. The numbers 0-8, equally spaced, are above each line, and three sets of descriptive phrases, such as "poorest student discussion I ever heard," "about average compared with other student discussions," and "best student discussion I ever heard," are below the lines. The raters indicated their opinions by drawing vertical lines intersecting each of the scales.

The writer followed these steps: He distributed the rating sheets, asked the students to fill out the necessary identifying data, and read with them the directions:

> You are participating in an educational experiment to determine how people respond to public discussions. You will find below a series of scales designed to measure your response to the program as a whole and to various qualities usually considered desirable in discussions. Draw a vertical line across each of the long horizontal lines at the point that indicates your reaction to the quality described.

He invited the students to ask questions. After the recording, without either consulting one another or hearing critical comments, they filled out the blanks and handed in the papers. So far as the writer could observe, each student worked independently and, within his limitations of ability and interest, responded honestly and intelligently. The classrooms were free of interruptions and distractions, but most students seemed apathetic toward the recordings.

The steps in treating the data were: (1) the computation of the means for the six factors for each of the fourteen recordings; the number of listeners varied from seven to thirty-two; the total for the fourteen groups was 268; (2) the computation of Pearsonian correlation coefficients for each of the fifteen combinations of these six means; (3) the calculation, making use of the z-transformation and the t-ratio, of the significant differences among the zero-order correlations; (4) the determination of which zero-order coefficients are significant; and (5) the computation through multiple correlation techniques of the percentage of variance contributed by each of the specific factors.

E. Fundamental Assumptions. As the study makes no statistical assumptions other than those discussed in the literature of that area, no comment here is necessary.

The other assumptions, some of which are questioned in the interpretation of the results, are those usual in educational experiments: (1) That the student raters provided honest, thoughtful reactions. No incentive existed for dishonesty, and the writer's observation was that the students acted independently and without facetiousness. Although as listeners they lacked outward enthusiasm, this fact is a human frailty which is a part of the variable under observation. In other words, this experiment deals with listeners as they are rather than as they ought to be. (2) That the raters provided judgments independent of the physical arrangement of the scales. Although the tendency to mark successive linear scales at the same place must be considered a possibility, a study of the zero-order coefficients rejects the hypothesis that habituation occurred to a significant degree. The five coefficients between adjacent scales have a mean of .71; the ten others, a mean of .66 (omitting the one very low correlation, of .15, the mean for the nine non-adjacent measures is .71). (3) That the terms employed in the scales have semantic validity—in other words, that the phrase "originality and accuracy of thought" produces a response that measures the reaction to the "real factor," which the phrase only represents. Some semantic

confusion probably occurs in all experiments using verbal rating scales; indeed, this problem is actually a part of the variable, for it pertains to both experimental and non-experimental value-making situations. The amount of semantic difficulty in this study appears to be no more than is normal in educational experiments, for all of the terms are commonly used in the beginning speech course.

II. Results

(1A) Table I presents the Pearsonian correlation coefficients among the six measures. The more extreme relationships are these: "Over-all response" is correlated the most closely with "organization" (.92) and "thought" (.88) and least closely with "material" (.50). A study of the differences between the various coefficients using the z-transformation,[1] shows that "material" possesses significantly less correlation with "over-all response" than do the other four specific factors.

(1B) Of the relationships among the specific factors, "thought" and "organization" give the highest coefficient (.86), and "material" and "interestingness" the lowest (.15). A study of the forty-five sets of differences among the ten coefficients of specific factors shows five to be significant at the five per cent level: 34 vs. 25; 34 vs. 26; 46 vs. 25; 56 vs. 25; 35 vs. 25. The smallest coefficient, that between "material" and "interestingness," thus, is significantly lower than that for four of the other combinations.

The student who evaluates "material" and "interestingness," therefore, appears to be making separate judgments. In other words, these two terms represent to him substantially different and only slightly related concepts. Material-delivery provides the only other coefficient which is significantly lower than any of the rest. This second result tends to confirm the first.

TABLE I

Pearsonian Correlation Coefficients among the Over-all Response and the Specific Factors

	2	3	4	5	6
1. Over-all Response	.50	.88	.92	.81	.80
2. Amount, quality, and relevance of material		.65	.40	.15	.36
3. Originality and accuracy of thought			.86	.79	.72
4. Organization				.74	.83
5. Interestingness					.80
6. Delivery					

Although these findings may be influenced by intercorrelation, the possibility exists that "material" is a more nearly independent factor than are the others and that halo effect has relatively little influence upon it.

The possibility that the smallness of r for material might be due to a lack of reliability in the application of the scale was tested by dividing the students of each section into groups equated on the basis of over-all response. As the obtained r was .91 (σr=.05), the hypothesis of unreliability was rejected.

(1C) A significant amount of correlation at the two percent level exists in eleven of the fifteen zero-order coefficients, as tested by Fisher's Formula.[2]

[1] Charles C. Peters and Walter R. Van Voorhis, *Statistical Procedures and Their Mathematical Bases* (New York, 1940), p. 188.

[2] R. A. Fisher, *Statistical Methods for Research Workers* (New York, 1948), p. 193.

Ten of these are also significant at the one percent level.

One of two explanations is true: Either discussion groups are almost uniformly good or bad in all factors, or student raters when recording their judgments fail to discriminate carefully among the items. The only zero-order relationships failing to attain significance at the five per cent level are over-all response-material, material-organization, material-interestingness, and material-delivery. Thus, "amount, quality, and relevance of material" either (1) is less related to other attributes of a discussion or (2) is more nearly independent semantically in the rater's mind than are the other descriptive phrases.

This finding is consistent with those of *1A* and *1B*.

(2) The percentage of variance contributed by each of the five specific factors when all others are held constant is as follows: material, .15; thought, —.30; organization, 19; interestingness, .22; delivery, —.14. These figures, obtained through multiple correlation, are regression coefficients expressed in relative terms.[3]

Of the positive factors, therefore, interestingness contributes the most to the students' over-all evaluation; organization ranks second, and material third.

The negative factors, which taken literally indicate that poorness of thought and delivery are constituents of good discussion, challenge certain of the basic assumptions of Section I.

A plausible explanation is that the phrase "originality and accuracy of thought" has no real meaning in the mind of the rater, that the markings on this item result from halo effect and chance, and that the zero-order coefficients are due to intercorrelation. A computation by partial correlation shows that removing the influence of organization reduces the coefficient for thought-over-all response from .88 to .45.

Delivery is the least influential of the five factors. The negative sign strengthens the hypothesis that this group of students had been taught that the worth of a discussion depends upon content.

III. Conclusions

This study has rather serious implications for both speech education and research.

It suggests that the assumption is naive that such a phrase as "originality and accuracy of thought" is really meaningful to students. In this particular group, a fairly large sample (N=268) and different in no obvious way from other sets of college classes, only the concept of "material" seems certain to have had discrete meaning.

This particular group, moreover, regarded material, organization, and interestingness as constituents of effective public discussion and disregarded thought and delivery. The soundness of the educational program producing this result is debatable. A further question is, "Without studies of this sort, do instructors know what critical standards their students apply to discussion, public address, oral reading, and the other of the speech arts?"

The chief implication for research is to cast doubt upon projects based upon data from ratings of a series of presumably discrete items. That the mean of the judgments of a number of raters gives an accurate evaluation of a public address or any other total performance has been established by too many experi-

[3] F. E. Croxton and D. J. Cowden, *Applied General Statistics* (New York, 1946), pp. 773-774.

ments to require documentation. But this study, which corroborates the writer's earlier finding[4] that rating scales recording an over-all measurement are as accurate as complex devices combining several evaluations, tends to refute the asumption that students make separate and careful judgments when confronted by a number of test items. "Material" was evaluated independently; whether the other items (a) were rated discretely and were highly correlated intrinsically or (b) were rated almost entirely by halo effect and chance is uncertain.

Further research should test the hypothesis that unless student raters are carefully trained and highly motivated judging a series of discrete items is either too difficult semantically or too laborious for them to provide meaningful data.

[4] "An Experimental Study of the Accuracy of Typical Speech Rating Techniques," *SM*, XI (1944), 65-79.

AN EXPERIMENTAL COMPARISON OF VOCABULARY GROWTH BY MEANS OF ORAL READING, SILENT READING, AND LISTENING

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THE first chapter of this study presented a statement of the problem and a review of the literature pertaining to (1) the relationship between intelligence, mental hygiene and scholastic success; (2) the inter-relationships among reading, writing, speaking, and listening; and (3) possible methods for building vocabulary.

In the review of the literature, it was noted: (1) that facility in the use of language has long been associated with high intelligence; (2) that there are very high correlations between language *development* and the *growth* of intelligence; (3) that the vocabulary level is a very important indicator of the "potential level" of intelligence in schizophrenia, paresis, and other mental diseases; (4) the meaning vocabulary remains about constant for the different decades from eighteen years of age to the seventies; (5) that the student who wishes to be a success in his college work must have an exact and extensive vocabulary; (6) that objective evidence on the differences and similarities between spoken performance and written performance seems imperative if students are to realize the maximum value from these communicative aspects of their college training; (7) that verbalization, the initial instruction in silent reading, speed of reading and reading comprehension on the silent level, merely attending college, and extensive reading are all contributing factors to the development of vocabulary. Thus, the importance of the study of vocabulary growth and development was established and affirmed.

Chapter II of this study detailed the subject, methods, and procedures involved in the investigation. In general, the experimental design of the present study was as follows: three groups, each of approximately 150 college students, were given a vocabulary test. Following the vocabulary test, one group was given a series of five stories to read silently, another group was given the same series of stories to read orally, and the final group listened to the same series of five stories by means of a tape recorder. After the groups had experienced the reading material in one of the preceding three ways, they were again given the vocabulary test. "Before and after" vocabulary scores for all groups were then computed and compared statistically.

The Cooperative Vocabulary Test, Form Q was chosen for use in this study. It comprises 210 multiple-choice items which are arranged in seven repeating scales of equal difficulty, and scores depend on the range of words known rather than on speed of word recognition.

It was hypothecated that one method of increasing a person's vocabulary might be that of reading or hearing words used in meaningful context. Therefore, the experimenter undertook to write a series of stories in which all 210 words from the vocabulary test were used in meaningful context.

When the series of stories was completed, the experimenter had one hun-

dred mimeographed copies made, and also recorded the material on a tape recorder.

The subjects for the test were all students from Pepperdine College.

In the Silent Reading Group and the Listening Group, there were a few over thirty students on each test, but in the Oral Reading Group it was necessary to limit the groups to exactly thirty since exactly thirty monitors had been secured.

In manipulating the data gathered by the foregoing procedures, the principal statistical techniques were chi square and the significance of mean differences.

After applying the procedures described, the resulting data were tabulated into five major groupings: (1) composition of the three groups of subjects; (2) before and after vocabulary test scores for all three groups combined; and (3) increases among the three groups.

In scheduling the experiments no attempt was made to determine which students should sign up for which of the three groups. Since the population from which all the subjects were drawn seemed to be fairly homogenous and since a minimum of 150 subjects would comprise each of the three groups, it was believed that the three groups would be reasonably well-matched by chance. In compiling the data, however, it was thought wise to compare the three groups immediately relative to all identifiable variables which might influence vocabulary scores. It was possible to compare the composition of the three groups in terms of five such variables: academic year, sex, age, IQ, and foreign students represented. The resultant comparisons follow.

1. It was found that the Oral Reading Group contained substantially fewer freshmen. Chi square analysis, comparing the number of freshmen in the Oral Reading Group with the number of freshmen in the other two groups combined revealed that this difference was significant at the .01 level of confidence. Similarly, chi square analysis of the distribution of seniors showed that the Silent Reading Group contained a significantly smaller number of seniors than the other two groups. This difference was significant at about the .03 level of confidence.

To establish whether or not these differences should be considered in interpreting vocabulary scores, the subjects from all three groups were considered as a single population and subdivided into the four academic ranks with the mean scores for vocabulary increases for the four groups statistically compared. Analysis showed that the difference in vocabulary gain between freshmen and seniors, a difference of approximately 6.8 words, with a t ratio of almost 3.0 was very significant. The other differences between academic years, although fairly consistent with the trend indicated by the foregoing, were not statistically significant.

2. It was found that in each of the three tests there were more males than females participating, and that in the listening test there was a very significantly higher number of males. To establish whether or not these differences should be considered in interpreting the vocabulary scores, the subjects from all three groups were considered as a single population, subdivided into the two sexes and the mean scores for vocabulary increases for the two groups were statistically compared. Analysis showed that the difference between the means was not significant. Therefore, it was concluded that disparities among the three groups in terms of sex differences need not be considered in interpreting the vocabulary increases.

3. It was found that the differences between the mean ages of the three groups were not significant: 22.2, 23.1, and 22.7. Therefore, it was concluded

that disparities among the three groups in terms of the mean age of each group need not be considered in interpreting the vocabulary increases. However, it was found that the age range over the entire testing program for the three groups was from sixteen to sixty. For this reason, it was felt desirable to explore possible relationships between vocabulary growth and physical age. The subjects from all three groups were considered as a single population, subdivided into age groups representing three year periods, and the mean growth for each group was determined in order to establish whether or not the differences of physical age should be considered in interpreting the vocabulary scores. It was found that there is an insignificantly small positive correlation between physical age and vocabulary gain.

4. Because of the known relationship between vocabulary *size* and intelligence, it was felt wise to explore the relationship between vocabulary growth and IQ rating. It was possible to obtain seventy-three representatives of the Oral Reading Group, seventy-nine representatives of the Silent Reading Group, and sixty-eight representatives of the Listening Group. An inspection of the means of the three IQ groupings indicated that none of the differences between the means was statistically significant. The possibility of a relationship between IQ and vocabulary gains was explored, and the differences were found to be insignificant. Inspection of the pre-test vocabulary scores indicated a positive relationship between IQ and *size* of vocabulary which was consistent with previous reported research. However, in the present experiment, no relationship was found between vocabulary *gains* and IQ scores.

5. The three groups were then classified in terms of the foreign students and their vocabulary growth through the various media. Because the numbers of foreign students in each of the three groups were so small, it was apparent that their effects upon the means for total subjects could not be great. Despite the small numbers of foreign students involved, a chi square analysis was applied. It was found that the differences between the three groups were not significant. The mean vocabulary growth of the foreign students was very significantly lower than the mean for non-foreign students.

Taking these several factors into account, it appeared that the most defensible interpretation of the findings might be that the capacity to improve one's vocabulary is increased "simply by going to college." Increasing maturity which comes with increased chronological age may be one of the factors, but apparently the entire Gestalt of college life is the most important explanatory principle involved. Summarizing the results with respect to the two remaining variables, it was found that there was no significant difference between the sexes; that the vocabulary gains of foreign students were very significantly smaller than for the non-foreign students.

Next, the data were compiled and classified in such fashion as to make possible an analysis of the total vocabulary gains, if any, for all three groups of subjects. As a result, it was seen that remarkable vocabulary gains occurred in all three groups and the statistical data indicated that the efficacy of the context method as used in these experiments had exceeded all expectations. Having established that significance, the next question became whether or not there were significant differences between the three presentation methods. Therefore, statistical comparisons were made of the mean gains among all three groups. Inspection of these comparisons indicated

that two of the three differences were significant at the .01 level of confidence, while the remaining difference was insignificant. The mean gain by the Listening Group was very significantly smaller than either of the other two groups. Comparison of the Oral Reading Group with the Silent Reading Group showed that the oral method was only insignificantly more effective than the silent method.

In interpreting the foregoing findings, several factors were kept in mind. In the first place, it was recalled that seniors scored significantly better than freshmen; and that the Oral Reading Group had significantly fewer freshmen than the other two groups while the Silent Reading Group had significantly fewer seniors than the other groups. These facts indicated that the Oral Reading Group enjoyed a slight advantage over the Silent Reading Group due to the accident of subject distribution.

However, as previously reported, foreign students scored significantly lower than the other students; and the Silent Reading Group contained the smallest number of foreign students. This gave a slight advantage to the Silent Reading Group.

Perhaps the most important factor of all in interpreting the inter-group data was the method of testing for vocabulary increase. The Cooperative Vocabulary Test, Form Q, like all others which have been experimentally validated and reported, is a silent reading method of testing. This factor, it was felt, probably favored the Silent Reading Group. It is possible to suppose, for example, the eventual construction of a *speaking* vocabulary test which might be contrasted with the *reading* test here used. In fact, it is widely assumed that significant differences exist between one's speaking and reading vocabularies. Likewise, it is possible to suppose the future development of a listening vocabulary test. If *speaking* and *listening* tests were available, it might be hypothecated that their use would favor the *speaking* and *listening* modes of presentation used in the present study. Under the circumstances, therefore, it was considered not surprising that the Listening Group scored significantly less than the Silent Reading Group. Perhaps the most remarkable finding was that the Oral Reading Group should not only hold its own with the Silent Reading Group, but even score slightly ahead. If it were possible to employ a speaking vocabulary test to measure the gains following both silent and oral presentation of context materials, the hypothesis might be advanced that the Oral Reading Group would show gains significantly greater than the Silent Reading Group. This hypothesis must await the testing of further research.

Conclusions

1. Very significant vocabulary gains were made by all subject groups following a fifteen minute period of test words presented in meaningful context.

2. Vocabulary gains by subjects listening to a tape recording of context materials were very significantly smaller than gains by the other two groups.

3. Vocabulary gains by subjects reading aloud the context materials were greater than both of the other groups, but only insignificantly greater than subjects silently reading the context materials.

4. Vocabulary gains were not significantly influenced by sex, IQ, or age.

5. Vocabulary gains for seniors were significantly larger than those for freshmen.

6. Vocabulary gains for foreign students were significantly smaller than those for non-foreign students.

A STUDY OF THE COMMUNICATIONS OF EXECUTIVES IN BUSINESS AND INDUSTRY

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HUNDREDS of articles emphasizing business communications have appeared in a variety of journals and magazines. Books have been written about this subject exclusively, and some briefer mention of business communications can be found in psychology, administration, and speech texts. Few of these writings point up specific problems arising from a systematic analysis of a particular situation. Few are based on research which has validated the material as being the most useful for training executives in communications skills.

There is little systematic knowledge of what should be taught in business communications courses, and of what should be included in a company's entire communications program. Relatively little attention has been given to the development of instruments to measure or evaluate the results of such training or programs. This situation, in this writer's opinion, seriously limits the effectiveness of executive development and training in business communications.

Some efforts to obtain more systematic information about this field have been made by research studies and conferences on communications research and training. Keith Davis[1] conducted a study which focused on channels of communications within the management group. James H. Davis[2] made a comprehensive study of the problems and practices of wholesale drug salesmen. C. G. Browne[3] has done research relating to executive communications. A number of conferences on communications have been held; most have been of the "how-to-do-it" variety.

It was believed that a systematic investigation of the communications problems and practices of executives in business and industry would produce more meaningful data in this area. Consequently, this writer studied three factors significant to business communications: (1) the frequency with which executives used various communications acts; (2) the value of each of these acts to the success of their jobs; and (3) the ease with which executives performed these communications acts. In addition, an attempt was made to study those phases of communications which might be especially applicable to the development of junior executives.

Research Design

A questionnaire-inventory form was designed for this study. The form consisted of 110 statements of communications acts, selected from a total of some 400 statements concerning business communications which appeared in articles and books on the subject. Statements which did not specifically mention communications but which required some type of communicating in order to be successfully carried out were also included. For example, students and

[1] Keith Davis, "Channels of Personnel Communication within the Management Group," (unpublished Doctor's dissertation, The Ohio State University, Columbus, Ohio), 1952.

[2] James H. Davis, *Increasing Wholesale Drug Salesmen's Effectiveness* (Columbus, Ohio: Bureau of Business Research, The Ohio State University, 1950), 193 pp.

[3] C. G. Browne, "A Study of Executive Leadership in Business," *Journal of Applied Psychology*, 30:82-87, 1950.

trainees for management positions are taught that under most circumstances it is good personnel practice, human relations, or psychology—the terminology depending upon the background of the instructor or author—to discipline an employee in private, away from his fellow-workers. Such statements of policy, procedure, or theory in some instances were also included as communications activities. Disciplining, for example, includes such communications characteristics as adaptation by the communicator to the occasion and the situation, adjustment to the listener or audience, a particular type of communications (face-to-face), and a judgment by the communicator as to the suitability of the subject matter for more than one listener. The criterion for including any item among those to be selected for the inventory was that it be an activity which constituted part of the job of being a supervisor in business or industry, or was characterized by taking place in a business or industrial environment.

After removing duplicate and overlapping statements, one hundred and eighteen statements remained. A group of twenty supervisors from several companies then rated these on a five-point scale for importance to the communications activities of management personnel. It was believed best for the purpose of this study to include only those communications practices considered most pertinent to everyday business activity. In this manner 110 items were obtained for the final form, each item being a statement related to communications in business and industry.

This study considered each communications activity in respect to FREQUENCY, VALUE, and EASE, as reported by the executive. Each of these factors was judged on a scale of five intervals. The FREQUENCY factor was scaled *almost always, frequently, occasionally, seldom,* and *almost never.* The VALUE factor was scaled *little or no value, slight value, moderate value, considerable value,* and *great value.* The EASE factor was scaled *very easy, relatively easy, neither easy nor difficult, relatively difficult,* or *very difficult.* The executive indicated his response to each item for each of the three factors, marking an "X" in the column headed by the descriptive phrase he felt best applied to himself. He thus made three "X" marks for each item, or a total of 330 marks. A total of 273 executives, representing all levels of management, completed the inventory; this represented about 35 per cent of the 783 forms distributed to some fifteen companies. Precautions were taken to insure the anonymity of the respondents and to keep their responses confidential.

Analysis of Data

All data were coded and punched on IBM cards to permit a quick and efficient handling of the statistical procedures. Biographical information obtained on the cover sheet of each form provided the data for coding for level of management, age, and years of experience as a supervisor. The size of the company was obtained easily from other sources. Each of these four variables was then divided into two categories.

"Level of management" was divided essentially according to the classification, description and definition of R. C. Davis.[4] He refers to those who occupy the first executive service level above primary operative performance as "first-

[4] R. C. Davis, *The Influence of the Unit of Supervision and the Span of Executive Control on the Line Organization Structure,* Research Monograph #16 (Columbus, Ohio: Bureau of Business Research, The Ohio State University, 1941), 25 pp.

line" supervisors. Their immediate responsibility is for the direction and supervision of groups of primary operative employees. The executives above first-line supervision are more concerned with the management functions of planning and organizing. Using this as a criterion, individuals cooperating in the study were grouped into the categories "High" and "Low" levels of management, the latter being "first-line" foremen.

The two categories for the factor "size" represented companies with less than 750 employees (Low) and companies with 750 or more employees (High). An arbitrary decision was made to divide the respondents at the forty years of age point. Those under forty years of age were classified in the "Low" group; those forty years of age or over were classified in the "High" group. Another arbitrary decision was made with the variable "years of management experience." The "Low" group contained those persons with under ten years of management experience; the "High" group contained those persons with ten years or more of management experience.

An "item value" was obtained for each communication act for each of the factors FREQUENCY, VALUE, and EASE. Each item was dichotomized into "low" and "high" using the midpoint of the frequencies of responses as the point of dichotomization. If the midpoint fell above the 50 per cent point within any one interval, the point of dichotomy was established between that interval and the next interval to the right. If it fell below the 50 per cent point within an interval, the point of dichotomy was between that interval and the next interval to the left. The frequency to the right of this point of dichotomization became the "high" score, and it was this value that was called the "item value." The "value" or "score" was based on assigned scale-interval values of 1-5.

Testing Differences Between Groups

Analysis of the data was undertaken to determine whether differences existed between individuals representing the two levels of management, the two age groups, the two years of experience groups, and companies of different size, in their reported evaluation of the three factors. To determine whether the differences, if any, were significant, chi squares, using 2x2 tables, were computed.

A total of twelve chi squares were run, there being four variables and three factors. For the factor FREQUENCY, the obtained chi squares were significant at the 1 per cent level of confidence for the variables "age" and "years of management experience." The differences between the two groups in the variable "size of company" and also in the variable "level of management" were not significant at either the 1 per cent or 5 per cent level of confidence. A chi square of 6.635 is significant at the 1 per cent level of confidence.

For the factor EASE, significant differences at the 1 per cent level of confidence were found between groups in three of the four variables. For the variable "age," there was no significant difference between the two groups at either the 1 per cent or 5 per cent level of confidence. Table I gives the chi squares for the variables for the three factors.

The difference between groups was found to be significant for all four variables for the factor VALUE.

Correlations between the reported frequency of use of the various communications acts, the reported value to the success of one's job, and the reported ease of performance of these com-

TABLE I

CHI SQUARE FOR THE VARIABLES FOR "FREQUENCY," "VALUE," AND "EASE"

Variables	Frequency	Level of Confidence	Value	Level of Confidence	Ease	Level of Confidence
Size of Company	0.1333	NS*	172.31	.01	14.04	.01
Level of Management	0.0922	NS*	12.09	.01	48.00	.01
Age	52.25	.01	8.34	.01	0.79	NS*
Years of Management Experience	68.65	.01	40.02	.01	66.49	.01

*NS = Not significant at either the 1 per cent or 5 per cent level of confidence.

munications activities were determined. The coefficient of correlation for FREQUENCY and VALUE was found to be .8736. For FREQUENCY and EASE the coefficient of correlation was —.594. The correlation between VALUE and EASE was —.451. All of these were significant at the 1 per cent level of confidence. A negative correlation would be expected in these latter two instances because of the direction of scaling the EASE factor. A high score on this scale meant "very difficult" and a low score on the scale meant "very easy." It might be expected that the communications activities used most frequently would also be the easiest to perform, and so a positive correlation would result. But because of the scale values assigned, where a high score meant very difficult, a negative correlation could be expected. That is, persons making a high score on the FREQUENCY scale (very frequently) would be expected to make a low score (very easy) on the EASE scale. This is borne out by the correlations obtained.

The Spearman-Brown formula was used to estimate the reliability of the full-length test. This was done for each of the three scales used in the study. The reliability of the FREQUENCY scale was found to be .94; that of the VALUE scale was .91; and the reliability of the EASE scale was .90. Each of these reliability coefficients is high enough to indicate only small random variations.

ITEM ANALYSIS

One purpose of this study was to obtain systematic information which might prove helpful in the development of junior executives. An item analysis of the communications acts with respect to the three factors revealed some interesting information. Each item was also classified according to the following six categories: (1) Listening; (2) Type of Oral Communications Activity; (3) Speech Processes; (4) Subject Talked About; (5) Speech Situation; and (6) Written Communication. A composite score was obtained for each item, in terms of the three factors, and placed in rank order.[5] The information obtained from these composite scores may be of some assistance when considering the content of a communications training program, but more definitive conclusions should not be made from these combined scores.

Because of limitations to the above method, another approach was used in making an item analysis. The total range of the item scores or values for each of the three factors was divided into three parts, resulting in what was called high, middle, and low ranges. With each factor having three range groups of scores, twenty-seven different combinations of groups were possible.

[5] The rank order of the composite values for FREQUENCY, VALUE, and EASE are presented in the writer's dissertation, but are not included here in order to conserve space.

Each item was analyzed to see in what range its "item value" fell. If it fell in the high group, the item could be interpreted as being used very frequently, of great value, or very hard to perform. The middle range could mean moderate frequency, moderate value, or moderate difficulty. If it fell in the lowest group, it could be interpreted as being used infrequently, of little value, or relatively easy to perform. It was reasoned that for training purposes "difficulty" was of major importance, so it was the factor considered as being held constant in this analysis.

The groupings of the one hundred and ten business communications acts follow:

High Difficulty, High Value, High Frequency:

No statement had this combination

High Difficulty, High Value, Middle Frequency:

Speak without use of notes when talking before a group

Make agenda or outlines for a conference or discussion

Talk where there is competing noise and attraction of interest

High Difficulty, Middle Value, High Frequency:

No statement had this combination

Middle Difficulty, High Value, High Frequency:

No statement had this combination

Middle Difficulty, High Value, Middle Frequency:

Serve as leader or moderator of a conference or discussion

Speak up in conferences or discussion meetings when higher management is present

Convince superiors to accept my plans or ideas

Tell employees about the company's point of view on employee relations, community relations, profits, quality of product, etc.

Use appropriate charts, diagrams, graphs, etc., to clarify my talk

Talk clearly to employees about the company's present and future plans and policies, such as pensions, insurance, wages, athletic teams, etc.

Comment on a subject quickly and to the point when called upon unexpectedly

Listen patiently to people who express themselves poorly or who show poor reasoning

Write my own communications (notices, letters, speeches, etc.)

Use my own individual style, language and phrasing in my writing instead of some standardized, uniform business style ("businessese")

Avoid using pat phrases, trite ways of saying things, in my written communications

Use forceful language where it is needed

High Difficulty, High Value, Low Frequency:

Recruit new employees for the company

Keep the group from acting too quickly on a matter

Write the same message in different ways to fit the education, position, attitudes or point of view of the different persons who will receive it

High Difficulty, Middle Value, Middle Frequency:

Make a speech for presenting a gift, an honor, an award, or paying tribute to someone

Present my ideas in a vivid dramatic way

Speak with poise and self-control even when under pressure

Write about the new things which are going on in the department or organization

Talk with civic or community groups, such as religious and educational associations

High Difficulty, Middle Value, Low Frequency:

Talk before an audience whose attitudes or points of view I know are different from mine

Talk at luncheon or dinner meetings of social, business, or professional organizations

High Difficulty, Low Value, High Frequency:

No statement had this combination

High Difficulty, Low Value, Middle Frequency:

Speak before groups with confidence, without feeling tense or ill at ease

High Difficulty, Low Value, Low Frequency:

Receive bad news or unflattering remarks without emotional flare-ups

Middle Difficulty, High Value, Low Frequency:

Use conferences with the group to bring about a change in their attitudes and behavior
Make announcements
Talk to employees about their personal problems
Talk in meetings where both employees and management are present
Write persuasive messages to others in the company or with whom I do business
Talk over labor agreements with subordinates

Middle Difficulty, Middle Value, High Frequency:

Listen carefully to another person so as to be sure to understand and interpret his remarks correctly

Middle Difficulty, Middle Value, Middle Frequency:

Interview employees who are quitting or who have been let go
Let an employee know as quickly as possible when I do not approve of his action or attitudes
Pronounce words acceptably
Organize what I am going to say in the best possible order
Adapt the way I say things to the education, intelligence, position, points of view of my listeners
Give the right kind of emphasis to my most important points to make them stand out clearly to the listener
Get my own ideas across clearly to my men
Give careful thought beforehand to what I am going to say
Admit my limitations or mistakes
Speak to an employee about serious mistakes he has made, rules he has broken, etc., without "flying off the handle"
Write briefly, to the point, using straightforward language
Use different forms of written communications, like bulletins, memos, letters to the homes, etc., for different subjects and situations
Write so that my purpose is not confused or misinterpreted by others
Use concrete, specific words in place of generalities
Make my written communications personal by using words like "you," "me," "I," etc.
Drop indirect hints to get an idea circulated
Criticize the work or behavior of another in such a way that his feelings are not hurt

Middle Difficulty, Middle Value, Low Frequency:

Create a feeling warmth or friendliness with my listeners
Talk in committee meetings
Talk to customers of the company
Talk to relax or amuse people

Middle Difficulty, Low Value, High Frequency:

Disagree with someone without hurting his feelings

Middle Difficulty, Low Value, Middle Frequency

Explain labor-management agreements to employees
Get my employees to participate cooperatively, as a group, in making decisions which affect them
Convince employees they should do something in a new way
Instill enthusiasm in the employees for their jobs
Report to the boss the bad or unpleasant news as well as the news I think he would like to hear
Write out reports or suggestions to my superior

Middle Difficulty, Low Value, Low Frequency:

Show the employees how what I am saying is related to their particular job interests
Handle personal squabbles among workers under my jurisdiction or supervision
Reply to rumors as soon as they appear to the satisfaction of my listeners
Think easily on my feet as I talk
Differentiate between what are a speaker's facts and his personal opinions
Recognize the attitude or feelings a speaker has toward what he is saying
Recognize when a person is giving what he thinks will be acceptable reasons for his actions or ideas instead of giving the real reasons
Use short words and sentences
Write definite, specific statements for which I could be held personally responsible, instead of "safe" general remarks
Make my written material easy to understand and interesting as well as informative

Low Difficulty, High Value, High Frequency:

Treat all my employees as important individuals
Act friendly with employees
Practice the policy of letting others who want

to consult with me come directly to me whenever they want to ("open-door" policy)
Give the worker a chance to explain his side of the story before taking disciplinary action
Listen carefully to what is being said before speaking up

Low Difficulty, High Value, Middle Frequency:

Speak in such a way that listeners can recognize my sincerity
Tell employees just what duties and responsibilities they have on their jobs
Use written communications to get information or orders to the employees in my department

Low Difficulty, High Value, Low Frequency:

Train or teach employees who are new to the job
Go through formal channels when communicating orally

Low Difficulty, Middle Value, High Frequency:

Communicate effectively in face-to-face speaking
Choose words which will be sure to be understood by my listeners
Listen with interest to the grievances of employees

Low Difficulty, Middle Value, Middle Frequency

Keep my staff informed of any changes in the condition of labor management relations in the company
Keep language and ideas in good taste
Speak with acceptable grammar
Speak concisely, to the point
Watch the reactions of my listeners to what I am saying
Tell employees the reasons for various orders which are given and changes which are to take place
Speak with men in the company who have about the same position I do
Speak outside of working hours with people who do not work for my company and with whom I have no business dealings
Talk things over with my superior without feeling nervous or ill at ease
Speak with tact and consideration
Speak frankly with employees

Low Difficulty, Middle Value, Low Frequency

Communicate effectively over the telephone
Keep employees informed on how well they are doing
Ask other persons in the company for information or advice
Point out to employees the part his job plays in the company's business
Speak outside of working hours with people who do not work for my company but who *do* have business relations with me
Talk to trades people
Explain to others how I perform the work I do

Low Difficulty, Low Value, High Frequency

No statement had this combination

Low Difficulty, Low Value, Middle Frequency

Urge employees to take part in the recreational activities provided for them by the company
Talk to people who are not employees about my company as a place to work

Low Difficulty, Low Value, Low Frequency

Speak about company matters in such a way that listeners do not think of it merely as company propaganda
Interview employees to see if they are qualified for new jobs or more training
Interview persons who are being considered for employment or for placement in a particular job
Talk clearly and effectively with anybody in the company whose job is different from mine
Speak with enthusiasm

In this manner one can observe which communications acts reported, for example, as being the most difficult to perform were also considered the most valuable to job success and were used most frequently.

Implications

Successful communication is needed to make orders, plans, policies and agreements clearly understood. An executive must be capable of communicating effectively with others in his organization. Chester I. Barnard,[6] an authority in management, has said that the executive's first function is to develop and

[6] Chester I. Barnard, *The Functions of The Executive* (Cambridge Harvard University Press, 1938), p. 226.

maintain a system of communication. Communication is necessary for the supervision of the work of others. It is basic in all inter-personal relations, direct or indirect. It is necessary for business in the transmission of its philosophy, plans, and policies to its employees and to others in society. Effective communication is needed if business is to be aware of the activities, attitudes, ideas and emotions of its non-supervisory and supervisory employees, of its customers, stockholders, and residents of the community in which it is located. It is becoming more evident that communicability is important to successful business operation, along with management "know-how."

Research such as this might be of assistance to a company interested in developing its executives in those phases of business essential to the successful achievement of its goals. To the extent that the items included in this research reflect some of the basic, general principles of personnel management, industrial psychology, and speech, this study revealed some information concerning the knowledge this group had of these principles. If the principles are valid ones, then it would seem important that executives have a working knowledge of them. A study similar to this could provide information which would make it possible to tailor a communications training program to an individual company or group.

Should the training consist of general principles of business communications and be given to all management personnel? Or would the new supervisor benefit most? Or the first-line supervisor? Or the young supervisor? Are there any specific communications acts for which training would be especially needed, and would this be of more value to one management group than to another? From investigation a company might be better able to determine the content of its communications training program, to determine to whom it should be given, and at what stage of his executive development.

Conclusions

This research was undertaken to determine in a systematic manner the frequency with which executives in business and industry used various communications activities, the value or importance of these communications activities to the success of their jobs, and the ease, or difficulty, with which the executives used these acts. The emphasis was placed on quantitative, original research in communications, with a systematic review of the literature in this area. It was also hoped to determine those phases of communications which might be especially important to the development of junior executives. The conclusions drawn from this study apply most directly to the 273 executives who cooperated in this research, although some implications can be extended to other groups of executives.

1. There was *no* significant difference in the frequency of use of various communications acts as reported by executives representing different levels of management.

2. There was a significant difference in the frequency of use of various communications acts as reported by executives representing different age groups.

3. There was a significant difference in the frequency of use of various communications acts as reported by executives representing groups with different years of management experience.

4. There was *no* significant difference in the frequency of use of various communications acts as reported by ex-

ecutives representing groups from companies of different size.

5. There was a significant difference in the value assigned various communications acts as reported by executives representing different levels of management.

6. There was a significant difference in the value assigned various communications acts as reported by executives representing different age groups.

7. There was a significant difference in the value assigned various communications acts as reported by executives representing groups with different years of management experience.

8. There was a significant difference in the value assigned various communications acts as reported by executives representing groups from companies of different size.

9. There was a significant difference in the ease of performing various communications acts as reported by executives representing different levels of management.

10. There was *no* significant difference in the ease of performing various communications acts as reported by executives representing different age groups.

11. There was a significant difference in the ease of performing various communications acts as reported by executives representing groups with different years of management experience.

12. There was a significant difference in the ease of performing various communications acts as reported by executives representing groups from companies of different size.

13. Research can provide systematic information for use in training executives in business communications skills.

SPEECH INTELLIGIBILITY RELATED TO MOTOR ACTIVITY IN THE PRESENCE OF HIGH LEVEL NOISE*

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INTRODUCTION

A HIGH level of intelligibility must be maintained during military communication regardless of any concurrent motor activities in which the talker is engaged. During the transmission of messages, the talker usually has to perform various tasks not exclusively concerned with voice communication. For example, the aircraft pilot must react to visual stimuli with appropriate manual responses at the same time that he is transmitting messages; and the control tower operator must maintain control of flight traffic through voice communication at the same time that he is reacting to visual and auditory stimuli with appropriate manual responses. The influence of such concurrent motor activities upon the intelligibility of the talker's speech has not been investigated thoroughly.

The majority of research projects related to the intelligibility of speech in the presence of high level noise have been concerned with testing speaking techniques, speech training procedures, listening skill, or the improvement of transmission systems. The first articulation tests were constructed during the 1920's at the Bell Telephone Laboratories by Harvey Fletcher, whose research was concerned with the development of a speech test to evaluate improvements in communications equipment.[1]

Just before the outbreak of World War II, the Navy Department, Bureau of Aeronautics, requested the National Defense Research Council to initiate a series of studies directed towards the improvement of speaker intelligibility over aircraft radio-telephone equipment. As a result of this request, in 1941 the Harvard Psycho-Acoustic Laboratory began to study the problem of improving speaker intelligibility in military situations.[2] In 1942, the Naval Air Station, Pensacola, Florida,[3] and in 1943, the Voice Communication Laboratory, Waco, Texas,[4] began to investigate problems related to the measurement of speaker intelligibility and to training individuals to speak more intelligibly. Post-war investigations of speech intelligibility have been continued at various

*This research was carried out under contract with the Office of Naval Research, Special Devices Center, Human Engineering Division, as Contract N6ori-104, T.O. II, Project NR-782-003, of which this is Technical Report No. SDC 104-2-27. The research report also constituted a dissertation submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy at Purdue University. The research was directed by Dr. M. D. Steer, and was conducted by the writer with the assistance of other members of the project staff.

[1] Fletcher, H., *Speech and Hearing* (New York, 1929), pp. 255-269.

[2] Egan, J. P. and Associates, *Articulation Testing Methods,* Office of Scientific Research and Development, National Defense Research Committee Report No. 383, 1942, 50 pp.

[3] Steer, M. D., "Speech Intelligibility in Naval Aviation," *Journal of Speech and Hearing Disorders,* X (1945), pp. 215-219; Steer, M. D., and Hadley, J. M., "The Speech Intelligibility Program in Naval Aviation: Historical Summary," *Quarterly Journal of Speech,* XXXII (1946), pp. 217-228.

[4] Black, J. W. and Staff, *Final Report in Summary of Work on Voice Communications,* Office of Scientific Research and Development, National Defense Research Committee Report No. 5568, 1945, p. 3.

research centers in the United States, under the sponsorship of governmental agencies.

Purpose of This Study

The purpose of this investigation was twofold. First, its purpose was to develop an instrument to present the stimuli relevant to a designated psychomotor activity and to measure performance during this psychomotor activity. Second, its purpose was to apply this instrument to research designed to answer the following questions:

(1) What effect does this psychomotor activity have upon the intelligibility of the subject's speech?

(2) Is speech intelligibility during performance of this psychomotor activity altered by (a) training to improve speaker intelligibility, (b) training at the psychomotor activity, or (c) an additional speaker intelligibility test while engaged in the psychomotor activity?

(3) What is the effect of training for improved speaker intelligibility upon the psychomotor activity?

The Psychomotor Activity

With the questions outlined above in mind, the Naval Research staff of the Voice Science Laboratory at Purdue University developed an instrument to present the stimuli relating to a psychomotor activity and to measure individual performance at this task. The device, designated the Manual-Verbal Response Tachistoscope (henceforth to be designated M-VRT),[5] presents both visual stimuli which require verbal responses and visual stimuli which require coordinated manual responses.

The stimuli which require verbal responses are words from the VCL 24-word Multiple-Choice Test.[6] The stimulus is viewed through a lighted slot, and it remains in view for a predetermined period of time, between two and five seconds. A tape, on which the 24 words to be used are printed, is attached to the rotating drum behind the view slot. The shaft of this drum carries a drive wheel which has 24 projections on its periphery, and a slow speed pawl engages these projections on the drive wheel to change the stimulus word being presented. Oral responses are made into the microphone and intelligibility test scores are obtained from the number of correct responses to the stimulus words by a listening panel.

Manual responses to the instrument's visual stimuli are of two types: a simple, rhythmic, manual movement and a more complex manual movement, both of which are carried on during communication. The second task was considered more representative of the psychomotor activity required in actual communication, and it was, therefore, the only task employed in the investigation here reported.

This more complicated activity is provided by stimuli which are presented on either side of the viewing slot by means of zero-centered electrical meters. As each new stimulus word appears, the meters are deflected. The specific motor activity required is to balance (zero-center) both meter dials while reading and speaking the stimulus word. The balancing controls are hand levers, which are connected to the respective meters. If the meter indication is '0', no manual operation is necessary; but if the meter reading is either to the right or to the left of '0', appropriate manual

[5] Wilson, D. K., Draegert, G. L., Hanley, T. D., and Ringo, K. A., *Manual-Verbal Response Tachistoscope: Distracting Device for Intelligibility Testing*, Purdue University, Voice Communication Laboratories, Technical Report No. SDC 104-2-20, 1950, 17 pp.

[6] Haagen, C. H., "Intelligibility Measurement," *Speech Monographs*, XIII (1946), pp. 4-7; *Intelligibility Measurement: 24-word Multiple-Choice Tests*, Office of Scientific Research and Development, National Defense Research Committee Report No. 5567, 1945.

operation is required. The time, in seconds, that the meter reads zero is accumulated on electric clocks; and this total time constitutes the motor score for the test. If only one hand is to be used in the balancing operation, one of the meters can be covered. Should it be desired to test only speech intelligibility, both meters can be covered and the control handles removed. Navy Device 8-I, Portable Interphone Trainer, and a telephone circuit which can combine speech signal and high level noise are necessary for operation of the M-VRT.[7]

Subjects

The subjects used in this investigation were 168 male students enrolled in elementary public speaking courses at Purdue University. The selection of subjects was essentially random.

Procedure

The M-VRT, along with Navy Device 8-I and a telephone circuit, was used in all phases of this investigation. The instruments were carefully calibrated and these precise settings were maintained throughout the investigation.

The earphones, Navy Type ANB-H-1A, were checked for acoustic output in order to insure uniformity. This check was made by measuring the acoustic pressure in bars/volt of a one-volt, 1,000 cycle signal with a Ballantine Artificial Ear, Type 505, and a Ballantine Vacuum Tube Voltmeter, Model 300. The eleven headphones used in this study had approximately 100 bars/volt of acoustic pressure. The noise level generated by Navy Device 8-I was calibrated so that the sound level measured at the headphones was 100.0 db. The telephone circuit gain was calibrated so that the mean speech signal level, as measured from peak meter deflections during the speech of representative individuals, was 102.8 db. This telephone gain setting results in a signal-to-noise ratio of 2.8 db.

The room used for this investigation was a large laboratory room, providing adequate lighting and ventilation. Twelve booths had been constructed in the laboratory to seat the subjects. Partitions were built between the booths so that no subject would be influenced by another's performance. Each booth was provided with a tablet type armchair and a Type ANB-H-1A headset. Testing booklets and pencils were placed in each booth prior to the testing session. The M-VRT and its associated equipment were placed behind the row of booths.

Eight to ten subjects were tested or trained at one time. During intelligibility testing each subject also served as a listener for every other subject.

During Period I of the investigation, all of the subjects were given Form B of the VCL 24-word Multiple-Choice Test in order to determine their initial intelligibility scores. The dials of the M-VRT were covered during administration of this test.

Certain major modifications were made in test procedure to adapt the VCL test to the M-VRT. First of all, the manner in which the words were presented to the speaker was altered. Instead of presenting the speaker with a type-written list of the words to be spoken, a tachistoscopic presentation as previously described was employed. Second, because the speaker necessarily had both hands occupied with the manual task, the hand-held microphone was replaced by a fixed-position microphone, supported by the headset and held in place in front of the speaker's mouth.

[7] *Handbook of Operating and Maintenance Instructions for Device 8-I, Portable Interphone Trainer,* United States Navy, Bureau of Aeronautics, Special Devices Division Report No. NAVAER 03-80R-7, Section 1, p. 1.

After the preliminary intelligibility test had been administered, each subject was assigned either to the control group or to one of the three experimental groups. Subjects were matched on age, initial intelligibility scores, and American Council of Education Test scores. The control group was composed of 56 subjects and the three experimental groups, I, II, and III, were composed of 38, 36, and 38 subjects respectively.

During Period II, the control group of subjects underwent an intelligibility retest (Form A of VCL test), while the three experimental groups were tested while engaged in the motor task, moving the control handles in response to visual stimuli from the meters on the M-VRT.

Period III was devoted to training. During this period the control group was inactive; Experimental Group I received training to improve speech intelligibility; Group II received training designed to improve performance on the motor task; and Group III underwent intelligibility testing with the psychomotor activity as described in Period II.

For training each of the experimental groups was divided into the 8-10 subjects who had comprised the original test panel, and each of these subgroups was trained separately. The training sessions were 50 minutes long. Each of the training sessions for Group I was carried out in the following manner:

1) 5 minutes—orientation to the objectives of intelligibility training.

2) 5 minutes—instruction on loudness factors in intelligibility read over the interphone system.[8]

3) 15 minutes—practice period, in noise, for adequate loudness.

4) 5 minutes—instruction on clearness for speaking in noise.[9]

5) 20 minutes—practice on loudness and clearness.

Each of the training sessions for Group II was carried out in the following manner:

1) 5 minutes—orientation to the purpose of the training session.

2) 5 minutes—instruction and suggestions regarding skill in the designated psychomotor task.

3) 40 minutes—practice on the M-VRT with two dials (word slot covered).

Experimental Group III received the speech intelligibility test with the psychomotor task as a kind of non-directive training session.[10] The instructions used were the same as in Period II. No suggestions regarding either speech intelligibility or psychomotor activity were given to this group.

During Period IV, the experimental groups were given Form C of the VCL 24-word Multiple-Choice Test with the psychomotor task, and the control group was also given Form C of the VCL test, but without the psychomotor task.

Results

The reliability of the intelligibility tests used in this investigation should be considered in light of previous experiments. Kelly[11] obtained reliability coefficients for the VCL 24-word Multiple-Choice Test ranging from .83 to .87 by correlating scores for odd-numbered listeners with scores by even-numbered listeners, corrected by the Spearman-Brown prophecy formula.[12] In the present investigation the reliability coefficients, obtained by the statistical method used by Kelly, for the intelligibility test with-

[8] Kelly, J. C., "Effect of Training on Speech Intelligibility Through Synthetic Noise Barriers," Ph.D. Dissertation, Purdue University, 1948, p. 46.

[9] *Ibid.*, p. 47.

[10] *Loc. cit.*

[11] *Ibid.*, p. 29.

[12] Peters, C. C. and Van Voorhis, W. R., *Statistical Procedures and Their Mathematical Bases* (New York, 1940), p. 194.

out the motor task ranged from .79 to .88. The reliability coefficients for the intelligibility test with the motor task ranged from .82 to .91. Therefore, it may be assumed that the special testing conditions used in this investigation apparently did not interfere with the internal consistency of the VCL test.

The reliability coefficients for the motor test, using the test-retest method, for the first and second experimental groups were .47 and .38 respectively. For the third experimental group which received three administrations of the motor test, the coefficient of reliability between the first and second test was .44 and between the second and third test, .70. The higher reliability coefficient for the second test with the third test is apparently due to the adjustment of the subjects to the test requirements and the elimination of trial and error learning. These results constitute a good argument for lengthening the motor test to increase its reliability. The relatively lower reliability coefficients obtained for the motor test should be taken into account when considering the results which follow.

Specific results of the investigation may be presented in response to the questions posed at the beginning of the study:

(1) What is the effect of a designated motor activity on the level of speech intelligibility?

The mean gain in speech intelligibilty scores from the first to second test for the control group was compared with that for the experimental groups. The control group received the intelligibility test only on both tests, whereas the experimental groups received the intelligibility test only in the first test and the intelligibility test with the motor task in the second test. These results are presented in Table I.

The gain made by the control group was 5.2 percentage points and that made by the experimental groups was 7.9 percentage points. The "t-ratio" for significance of differences for the mean gains was not significant. From this it may be concluded that the complex manual task has no apparent effect upon speech intelligibility performance.

(2) Is speech intelligibility proficiency during performance on a designated motor task altered by (a) speech intelligibility training, (b) motor training, or (c) taking an additional speech intelligibility test with a psychomotor task?

In the analysis of variance used, the *between groups variance* was significant at the 1% level (Table II). This analysis is based on the results of Test 3, Table I.

As is noted in Table I, the mean intelligibility scores for Groups I and III in the third test were practically equivalent. The "t-ratio" of .07 between these two groups was not statistically significant at the 5 percent level of confidence. However, Group II was different to a

TABLE I

INTELLIGIBILITY SCORES FOR ALL GROUPS.

Groups	Per Cent of Words Correct			
	Test 1*	Test 2	Test 3	Test 3-Test 2
Control Group	49.0	54.2	67.3	+13.1
Experimental Group I	47.7	53.9	72.0	+18.1
Experimental Group II	45.1	52.7	63.5	+10.8
Experimental Group III	48.7	58.7	71.9	+13.2
All Experimental Groups	47.2	55.1	69.2	+14.1

*Tests 1, 2, and 3 represent different experimental conditions, defined in text.

TABLE II

ANALYSIS OF VARIANCE BASED UPON INTELLIGIBILITY SCORES AT THE CONCLUSION OF TESTING AND TRAINING, EXPERIMENTAL GROUPS.

Source	d.f.	Sum of Squares	Mean Square
Between groups	2	1737.38	868.69
Within groups	109	8473.62	77.40
Total	111	10211.00	946.09

$$F = \frac{868.69}{77.40} = 11.22^{*}$$

*For significance at the 5% level, F of 3.09 is necessary, and at the 1% level, 4.82.

statistically significant degree at the 1 percent level from Groups I and III, with t's of 4.13 and 4.26, respectively.

Group III, which received an additional intelligibility test, was equivalent in intelligibility scores with Group I, which received speech intelligibility training; whereas, Group II was significantly inferior to Groups I and III in mean intelligibility scores. Thus, it appears that the speech intelligibility training period and the taking of an additional intelligibility test (in this case accompanied by a psychomotor task) both resulted in significantly greater gains in speech intelligibility than did training in the psychomotor task alone.

(3) What is the effect of training in speaker intelligibility upon the designated motor performance being employed?

The score on the motor task was the time in seconds that the meters were zero. The scores on the motor task for the three experimental groups are presented in Table III. The motor score of the group trained in intelligibility (I) decreased 5.0 seconds on the second test; that of the group receiving an additional intelligibility test (III) increased 9.2 seconds; and that of the group trained in the motor task (II) increased 13.2 seconds. The *between groups* mean square in the analysis of variance was significant well beyond the 1% level. The "t-ratios" between the gains of the three groups indicate that the difference between groups I and II and between groups I and III were significantly different beyond the 1% level. These data indicate that training in speaker intelligibility is not accompanied by an increase in motor task performance.

TABLE III

TEST, RETEST MOTOR TEST SCORES FOR EXPERIMENTAL GROUPS.

Experimental Groups	Seconds Meters Were Centered		
	Test 1	Test 2	Test 2-Test 1
I	46.3	41.3	−5.0
II	45.1	58.3	+13.2
III	42.7	51.9	+9.2

TABLE IV

ANALYSIS OF VARIANCE BASED UPON MOTOR IMPROVEMENT SCORES, EXPERIMENTAL GROUPS.

Source	d.f.	Sum of Squares	Mean Square
Between groups	2	6900.26	3450.13
Within groups	109	16064.59	147.38
Total	111	22964.85	3597.51

$$F = \frac{3450.13}{147.38} = 23.41^{*}$$

*For significance at the 5% level, F of 3.09 is necessary, and at the 1% level, 4.82.

Summary and Conclusions

The purpose of this investigation was to develop an instrument for presenting and measuring a designated motor activity during word intelligibility testing and to apply this instrument under experimental conditions. The Manual-Verbal Response Tachistoscope was designed and constructed at the Purdue University Voice Science Laboratory. One hundred and sixty-eight male students from public speaking classes were initially given the VCL 24-word Multiple-Choice Test. Subjects were assigned to either a control group or to one of three experimental groups. The experimental groups were given an intelligibility test with a concurrent motor task. Each group was then given specific training in either speech intelligibility, motor performance, or intelligibility test taking. Training was followed by a final test of speech intelligibility with the designated motor task. A control group received two intelligibility tests without the motor task.

Within the limitations of this investigation, and with specific references to the intelligibility test and motor task employed, the following conclusions appear to be warranted:

1. A complex coordinated manual task has no apparent effect upon speech intelligibility performance.
2. A one-hour training period in intelligibility is followed by intelligibility test scores which are higher than the intelligibility test scores made by subjects after a one-hour motor training period.
3. A training period consisting of one additional test experience apparently is followed by an increased intelligibility level by an amount not significantly different from that accuring from a one-hour speech intelligibility training period.
4. Training in intelligibility is not accompanied by an increase in motor test performance.

CHARLES GRANDISON FINNEY: HERALD OF MODERN REVIVALISM

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IN the autumn of 1821 a man entered the office of his lawyer to inquire if the latter were prepared to represent him at court that morning as previously agreed upon. The barrister replied, "Deacon B———, I have a retainer from the Lord Jesus Christ to plead his cause, and I cannot plead yours." The bewildered client was informed that he must find someone else to attend his law suit. He went back into the street, stood there in deep thought, and then went away to settle his complaint out of court.

The lawyer who was in such great haste to be about his Father's business was Charles Grandison Finney, attorney, evangelist, minister, professor, and president of Oberlin College. He had been converted the night before the above incident took place. The event changed him from an obscure frontier lawyer into the most famous religious orator of his day. It has been said "evangelism entered modernity with him,"[1] because it was Finney who originated many of the evangelical methods used by such famous revivalists as Moody, Chapman, and Mills. Their work can be better understood if we are acquainted with Finney's career.

His Background

The man who was to be the link between Colonial evangelism and modern city revivalism was born in Warren, Connecticut, on August 29, 1792. When he was about two years old his family moved to Oneida County, New York. The family was not religiously inclined and while growing into manhood Finney "seldom heard a sermon."[2] His secular education, however, was better than average, for he "enjoyed the privileges of a common school, summer and winter," until he was fifteen or sixteen years old.[3]

Finney began training for the bar in 1818 by reading in a law office. It was during this period that he first became interested in religion. His reading showed him that many of our modern legal concepts are founded on the Mosaic law:

> This excited my curiosity so much that I went and purchased a Bible, the first I had ever owned; and whenever I found a reference by the law authors to the Bible, I turned to the passage and consulted it in its connection. This soon led to my taking a new interest in the Bible, and I read and meditated on it much more than I had ever done before in my life.[4]

Finney was converted in 1821, shortly after becoming a member of the bar. His conversion did not stem from his newly-formed interest in the church, but from his own private reading of the Scriptures. He was now convinced that the book was divinely inspired and while praying in a grove at the edge of town after a period of Bible reading, Finney found God.[5] He began to testify about

[1] Grover C. Loud. *Evangelized America* (New York, 1928), p. 208.

[2] C. G. Finney. *Memoirs of Rev. Charles G. Finney* (New York, 1876), p. 6. Finney wrote this book during the winter of 1867-68, but it was not published until after his death.

[3] *Ibid.*, p. 4.

[4] *Ibid.*, p. 7.

[5] The emotional experience lasted several days. For a complete description, see *ibid.*, chap. II.

his experience almost immediately. Although Finney had never prayed before his conversion, even to ask grace at table, he now attended prayer meetings that he might speak and pray. His experience was the primary subject of gossip in the town, and his quick testimony concerning it was instrumental in converting several others.

Soon afterward Finney talked with his minister Rev. George W. L. Gale, a graduate of Princeton and a follower of the extremely conservative wing of the Presbyterian church. Gale was "of the old school type" who preached "hypercalvinism."[6] Finney was desirous of becoming an ordained minister, and Gale agreed to be the tutor in his studies.

Although the two men worked together for two years they were constantly disagreeing, for Finney could not accept the rigid doctrine of Predestination as taught by the conservative Gale who believed that only those people fortunate enough to be "elected" by God would go to Heaven. The rest were doomed to Hell, no matter what kind of lives the two groups appeared to lead here on earth.

Finney, in contrast, believed that God was willing to save all men without restriction. "God's command to obey implied that we can obey," and if a certain person turned his back on the gospel invitation to "believe in the Lord Jesus Christ" and be saved, it was because he did not want to follow Christ.

This idea that a man is Christian or non-Christian by act of his own free will was regarded by many clergymen as a "new and strange" doctrine, and caused some ministers to insist that Finney rejected divine regeneration in favor of self-conversion.[7] Modern readers will recognize the viewpoint as exactly the philosophy around which revivalists from Moody to the present have organized their messages.

Even though Finney and Gale could not agree on theology they maintained cordial relationships, for each recognized the other as a man of integrity. In 1824 Gale recommended that Finney be examined for the ministry. The presbytery was extremely lenient in its examination, not seeming to care when Finney explained that he could not accept certain parts of presbyterial doctrine, and voted unanimously to license him.

His Preaching

Finney began to preach in the little frontier towns of western New York. From the first he was primarily an itinerant preacher, wandering wherever he was needed, holding a revival here, awakening a town there, exhorting a settlement somewhere else. Usually he appeared by invitation, although sometimes he came for reasons of his own.

In the years 1824-1832 Finney covered New York, northern Pennsylvania (with a significant excursion down the Delaware to Philadelphia), and Massachusetts. It was during this period that Finney gave American revivalism "a new direction and objective," for "unlike his rural-faring predecessors," he began to spend his time in the larger cities.[8] His pattern of traveling to a city at the invitation of a minister or Christian worker was the basic plan later adopted by most evangelists.[9]

It was during these years that Finney encountered opposition to his style of

[6] *Ibid.*, p. 7.
[7] *Ibid.*, pp. 157-158.

[8] Loud, *op. cit.*, p. 202.
[9] Asahel Nettleton toured New England cities a few years prior to Finney's conversion and thereby shares Finney's place as a city pioneer. He is not included in this article because shortly after becoming established as a city evangelist he was stricken with typhoid fever and was enfeebled for the remaining twenty years of his life.

preaching. He was exceedingly articulate by nature and never wrote down his sermons in advance. In fact, he was opposed to reading sermons because he believed a manuscript lessened directness. "It was not to me much like preaching."[10]

Just as Finney did not think that reading from manuscripts was true preaching, others did believe that his extemporaneous method was correct. One of the commonest objections which Finney received was that "You do not preach. You talk to the people." Finney agreed that by the commonly accepted standard, "I have never preached."[11] It was predicted that he would fail as a pastor, for congregations surely would not assemble to hear sermons that showed little sign of effort.

The prediction was wrong. The public thronged to Finney's services for years until "the more I saw the results of my method of preaching, the more I conversed with all classes, high and low, educated and uneducated, the more was I confirmed in the fact that God had led me, had taught me, had given me right conceptions in regard to the best manner of winning souls."[12]

To Finney, a sermon was not a sterile exercise, but an occasion for "that gushing, impressive, and persuasive oratory, that naturally flows from an educated man whose soul is on fire with his subject. . . ." Anytime men are in earnest, as a minister should be, "their language is in point, direct, and simple. Their sentences are short, cogent, powerful."[13]

Finney chided his fellow ministers for deliberately being so indirect in thought that the congregation could see no connection between the subject of the sermon and its own wants and problems. Again, thought Finney, the sermon becomes academic and sterile, incapable of giving the audience spiritual nourishment.[14]

His opponents replied that Finney lacked the dignity necessary for a worship service. Not only was his style below the accepted standard, but his delivery lacked needed decorum. He was rebuked for pacing the aisle and presenting his case like a lawyer at the bar instead of as a minister preaching for God. He was warned against being overly earnest; his gestures had too much vehemence and he said "hell" "with such an emphasis as often to shock the people."[15] All of these characteristics, added to Finney's homely illustrations and his prayers that often employed the names of those present, so aroused the prejudices of his conventional listeners that he was occasionally "threatened with tar and feathers, and even with death."[16]

There was some justice to the complaint, if not in the suggested remedy, for Finney deliberately aroused his audiences emotionally. He specialized in preaching to those persons who did not take religion seriously, and he felt that he must stimulate them to the point where they would accept salvation. He went so far as to use vulgarity intentionally in his sermons on the theory that he must communicate on the level normally used by his listeners. Even though his naturally logical mind always felt the need for a substantial and well organized message, Finney was a man of intense conviction who stated his ideas in emotional terms so that audiences were greatly stirred by him. "I poured

[10] Finney, *Memoirs*, p. 6.
[11] *Ibid.*, p. 92.
[12] *Ibid.*, p. 87.
[13] *Ibid.*, p. 90.

[14] For a complete statement of Finney's philosophy of preaching, see his *Lectures on Revivals of Religion* (Oberlin, 1868), chap. XII, "How to Preach the Gospel."
[15] Finney, *Memoirs*, p. 83.
[16] *Dictionary of American Biography* (New York, 1931), VI, p. 394.

out my soul and my tears together." Sensitive listeners felt he went too far and in time Finney came to agree with them in part, for he gradually abated his use of emotionalism until by 1855 he had switched the emphasis of his message from the terrors of hell to the positive attraction of divine love.[17] Dramatic and interesting he still was, but the pathos was controlled. Once more Finney was linking traditional methods to the new ones which would be adopted in a few years by Moody and his contemporaries. The reign of crude irrational fear associated with frontier revivals since colonial days was coming to an end.[18]

Finney was popular with audiences all through his life. Standing six feet two inches tall in the severe black clothes of his day, his eyes bright with the fire of an intelligent man who has a conviction, unrestrained in his gestures and picturesque in his language, Finney made a platform impression that compelled attention. When the natural magnetism of his personality was expanded by the social factors of the revival situation, the result seems to have approached hypnosis. Davenport thought Finney's power "to compel individuals and audiences to his will and purposes was . . . the most extraordinary of that in any great evangelist," and cites a personal experience to prove it.[19] Finney himself believed that the power was from God and never sought to abuse it. So great was his integrity that pastoral critics were often won to his way of preaching while Finney labored in their areas.

In spite of his emotionalism Finney was liked by educated and wealthy groups. His most famous revival took place among professional men, and certainly Finney was popular with the cultured members of Broadway Tabernacle and the students and faculty of Oberlin College. Nor was this because Finney confined himself to pleasing topics. In each case he spoke what he felt his congregation most needed to hear, even though he often had to overcome a hostile reaction in the process.[20]

Finney's method of sermon preparation was akin to his speaking habits, for he rarely spent much time in preparing a specific sermon. Especially in his early years Finney maintained a crowded schedule and "was obliged to preach almost without premeditation; for I had not an hour in a week, which I could take to arrange my thoughts beforehand."[21]

Furthermore, Finney liked to adapt his speeches to the immediate needs and moods of the audience and often purposely left the subject of his sermon to the inspiration of the moment. He would explore the town upon arrival and study the congregation at the meeting place. Then he selected whatever text seemed to be the most appropriate for the occasion. Many of his early sermons were more impromptu than extemporary, for "often times I went into the pulpit without knowing upon what text I should speak, or a word that I should say."[22]

Although Finney spent little effort in specific preparation, he did do a great deal of general preparation. He read his Bible constantly and was thoroughly familiar with all parts of it so that he had a great many texts and much material stored in his mind for instant use. Since Finney traveled by foot, carriage, and horseback over quiet roads for long periods of time there was ample oppor-

[17] Loud, *op. cit.*, p. 208.

[18] Frederick Morgan Davenport. *Primitive Traits in Religious Revivals* (New York, 1905), p. 202.

[19] *Ibid.*, p. 193. See p. 199 for the account of the incident.

[20] Finney's *Memoirs* are filled with examples. See p. 101 ff. for one instance.

[21] *Ibid.*, p. 168.

[22] *Ibid.*, p. 95.

tunity for prayer and meditation upon sermon topics. Finney himself believed that most of his sermons were given to him by God to fit the immediate need of the moment, a belief which may explain why he could mount a pulpit without fear even though he was unprepared.

Finney prayed often about his work because if "even for a day or an hour I lost the spirit of grace and supplication, I found myself unable to preach with power and efficiency, or to win souls by personal conversation."[23] In fact, so great was his reliance upon prayer, Finney made sure that it permeated each of his revivals. When entering a new town "his first aim . . . was always to secure united prayer" by the Christians in the area.[24] This he did by calling upon them and forming them into "prayer bands." Each band was requested to meet regularly and pray for the success of God's will in the community.[25] If a particularly serious problem arose, Finney sometimes gathered special bands to pray about the matter. Thus when Finney was opposed by Theodore Parker during the Boston revival, he persuaded forty Christians to pray each day in the vestry of Park Street Church for God to overcome the opposition to his servant.[26] The plan seems to have been successful, for Parker withdrew his objections before the campaign was finished.

After 1832 Finney became the pastor of some established churches in New York City. It was then that he used outlines or, as he called them, "skeletons." He had begun making skeletons earlier, but always *after* preaching the sermon in order to preserve a sequence of ideas which had proved especially effective. It was not until he became a resident minister that he wrote his outlines before speaking.[27]

His New Measures

The greatest opposition which Finney met was concerned not with his theology nor his manner of speech, but with the "new measures" which he used to win converts. Though they seem common now they were new in Finney's time and aroused considerable resistance, especially among the Presbyterian and Congregational clergy. The objections were intensified by exaggerated descriptions of Finney's methods which were sent to the religious press by his enemies. Beardsley thinks that these accounts had as much to do with causing other ministers to oppose him as did the methods themselves.[28]

The most prominent "new measures" were: (1) use of the anxious bench, (2) praying for people by name in open meetings, (3) allowing women to pray in public in the presence of men, (4) the practice of advertising the time and place of his meetings, and (5) protracted meetings. These were the specific complaints although there was also some criticism because Finney was one of the first revivalists to show "a disregard for denominational lines at a time when they were closely drawn."[29] Interdenominational evangelism became the accepted trademark of the city revivalists of the next generation, but in Finney's day it was frowned upon. Again Finney was the herald of the new order.

The new measures were resisted because they violated the customs of the

[23] *Ibid.*, p. 142.
[24] G. Frederick Wright. *Charles Grandison Finney* (Boston, 1891), p. 30.
[25] Basil Miller. *Charles G. Finney: He Prayed Down Revivals* (2nd ed.; Grand Rapids, 1941), p. 108.
[26] *Ibid.*, p. 111.
[27] Finney, *Memoirs*, contains a facsimile of part of one skeleton between pp. 96 and 97. It is quite detailed.
[28] Frank Grenville Beardsley. *History of Revivals in America*, p. 136.
[29] William Warren Sweet. *Revivalism in America* (New York, 1944), p. 135.

day. In an age when laymen were expected to do little in the church other than absorb the minister's teachings on Sunday, and when women were not thought to be equal to men in any way, Finney's allowance of public prayer by lay men and particularly by lay women was shocking to consider. So was the device of having sinners declare their status on a public bench at the front of the room, for earlier evangelists had not stressed the public pledge as much as did Finney. To people unused to aggressive and incessant advertising campaigns, the thought of God's services competing for attention with theaters and patent medicines was too horrible to contemplate.

The protracted meetings, defined by Finney as devoting "a series of days to religious services in order to make a more powerful impression of divine things upon the people,"[30] were opposed because they consumed a great deal of the public's time. There were complaints that the corporate life of the town came to a halt while a fanatic preacher monopolized its time with his pursuit of salvation. This was an exaggeration, for no one person was expected to attend every service. The objections soon died away. Later evangelists used protracted meetings as a matter of course. Moody regularly conducted two or three meetings a day, and sometimes held "all day meetings."

Finney knew that protracted meetings could be overdone and realized that they must not interfere with worldly duties or family devotions. However, Finney insisted that "real duties never interfere with each other," and that God would provide time for both religious and temporal affairs. The minister, he stated, must use common sense in scheduling meetings, particularly during such unusually busy periods as the planting and harvest seasons.[31]

Finney continued to employ his new measures in spite of all opposition, and wherever he could work unmolested his results convinced local ministers that he was a true servant of God.[32] Thus it was that when the climax came in July of 1827, Finney was not without supporters. A convention was called at New Lebanon wherein Finney was confronted by Lyman Beecher and Asahel Nettleton. By this time Finney had travelled throughout New York state and there was some apprehension that he would move into New England. This was to be prevented if possible, and if not, then the conservative Beecher and Nettleton wanted to reach agreement with Finney as to the proper way to conduct revivals. The convention lasted for several days and was attended not only by the protagonists, but by other ministers who were friendly to one side or the other.[33]

The discussions were quite heated because Beecher had written some letters to the public press denouncing Finney's methods and the year before he had urged Nettleton to oppose Finney. The two men had persuaded other pastors to their way of thinking. Hence, by the time the two groups met, both Nettleton and Beecher were "very sensitive" because Beecher "felt himself committed, and that his reputation was at stake" before the influential New England ministers whom he had enlisted to support him.[34] At the conference the New Englanders described their dislike of Finney's work; the New York ministers vowed that their opponents' impressions were erroneous and insisted on knowing their sources of information. The con-

[30] Finney, *Lectures*, p. 242.

[31] *Ibid.*, p. 243.

[32] Finney's defense of his new measures is long, lucid, and masterly. His account may be found in *Lectures*, pp. 238-262.

[33] Finney, *Memoris*, p. 212.

[34] *Ibid.*, p. 212.

ference ended after a resolution was adopted stating that certain practices were not to be indulged in by revivalists. Since Finney had never done any of the things complained of in the resolution he was willing to vote for it. The resolution passed unanimously and each delegate went away convinced that his point of view had been upheld. Four years later Beecher and Nettleton headed the committee which invited Finney to hold meetings in Boston.

Soon after the conference the greater part of the opposition to Finney ended. More and more ministers were realizing that Finney was worthy of support. The "new measures" conflict had been smoothed over with a meaningless resolution and Finney was beginning to tone down the emotional coloring of his sermons in favor of logical content. Although the irritation concerning Finney's theology continued in some quarters, by and large he was now accepted as an honorable member of the Presbyterian clergy. In 1832 he was invited to a pulpit in New York City. In 1834 the Broadway Tabernacle was built for him. However, dissatisfied with the difficulties of administering discipline through the Presbyterian form of organization, Finney withdrew from that denomination in 1836.[35] The Tabernacle became Congregationalist.

Slavery was the paramount issue of the day, and Finney identified himself with the abolition movement soon after arriving in New York. He alluded to slavery often in his sermons in order to "arouse public attention on the subject." Nevertheless, he did not "turn aside to make it a hobby, or divert the attention of the people from the work of converting souls."[36] His stand, therefore, never hindered his ministerial work, limited the size and type of his audiences, nor influenced the basic content of his sermons.

In addition to his duties as a minister, Finney established and edited a remarkably successful periodical called "The Revivalist." In 1835 he was invited to found a department of theology at Oberlin College and for two years Finney served both the school and his New York church. In 1852 he became president of Oberlin. He was given an assistant to handle administrative details so that he was able to conduct revivals and religious meetings until a short time before his death on August 16, 1875. By that date he had been an active evangelist for over fifty years. During that period he was America's most effective religious orator. Some of his successors are rightfully better known, but Finney showed them the way. He was the herald of what is now known as modern American revivalism.

Summary

Finney was an important man in his day because he was the originator of new evangelistic techniques, the teacher of a radical theological system which later became accepted, a college president, and the most effective evangelist of the middle nineteenth century. He is important to us both because he represents the transition in religious oratory from the frontier preacher to the city revivalist and because he was one of the few men who practiced in speech delivery the modern concept of energized conversation. The correctness of his ideas is attested to by the many critics who put away their objections after observing him work, as well as by the great numbers of city evangelists who successfully adopted his theories and methods. Because of Finney, their work was easier and their acceptance by the public greater than it would otherwise have been.

[35] Wright, *op. cit.*, p. 107.
[36] Finney, *Memoirs*, p. 324.

THE ARMED FORCES RADIO SERVICE

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DURING World War II the United States Army developed a radio broadcasting activity to assist military morale. This project was known as the Armed Forces Radio Service.[1] To fulfill its mission the agency built a world-encircling "network" of radio outlets, the largest grouping of stations that had ever been attained. Yet, in spite of the magnitude of its scope this operation remained relatively unknown to the people of the United States.

While the tools and techniques of speech contributed in many ways to the American World War II effort, perhaps it is in the activities of AFRS that the greatest utilization of speech may be found. Therefore, it is believed that the speech profession as a whole should be given the opportunity to know something of the background and scope of this activity.

Information for this paper came from public materials, government papers, private papers, and personal testimony. Personal testimony was the most valuable source of data.

I. Forerunners of AFRS

Broadcasts for American troops developed in answer to needs expressed[2] by overseas service personnel. During the first few months of World War II fan mail from servicemen stationed in China and the Philippines informed domestic short-wave broadcasters of the troop needs.[3] In response the radio men transmitted special troop programs. As the US Government's Coordinator of Inter-American Affairs and its Coordinator of Information began short-wave activities they, too, planned troop shows.[4] On 1 November 1942 the Government assumed control of all domestic short-wave stations.[5] These were operated by the Office of War Information, a successor to the Coordinator of Information, in conjunction with the Coordinator of Inter-American Affairs. Both of these agencies made troop broadcasts an integral portion of their schedules.

In the early summer of 1941 the Army's Bureau of Public Relations received a request for special broadcasts to the isolated American troops stationed in Iceland.[6] As a result the bureau initiated several series of programs for short-wave transmission. The most famous of these was "Command Performance."

In the Fall of 1941 the government-sponsored United Service Organizations began to operate radio activities for servicemen within the United States.[7] One of these projects was a carrier current "network" of low-powered stations operating within domestic training camps.

Probably it was the development of

[1] Hereafter called AFRS.

[2] E. M. Kirby and Jack W. Harris, *Star Spangled Radio*, 1948, pp. 52 f.; Hope Gray, "Command Performance," *Song Hits Magazine*, date and page unknown; Thomas H. A. Lewis, *Historical Notes*, 1 November 1944, n. p.; Robert J. Coleson, 28 March 1950.

[3] E. I. Buck Harris, "Shortwave Broadcasting in the Pacific Basin," *Writers' Congress*, 1944, p. 178; E. I. Buck Harris, 2 August 1950; Robert G. Goodman, 13 August 1950.

[4] Thomas H. A. Lewis, 23 June 1950; Robert E. Sherwood to T. S. DeLay, Jr., Letter, 4 August 1950, p. 1.

[5] (Donald W. Rowland), *History of the Office of the Coordinator of Inter-American Affairs*, 1947, p. 62.

[6] E. M. Kirby and Jack W. Harris, *op. cit.*, pp. 52 f.

[7] Martin H. Work, 19 June 1950.

unofficial Army radio stations that most correctly foreshadowed AFRS' eventual operation. In December 1941 servicemen and civilians at Kodiak[8] and Nome,[9] Alaska, succeeded in building unauthorized, low-powered, standard-wave stations from "baling-wire" parts. Here facilities were built and operated by the servicemen themselves as an answer to their own pressing needs.

As AFRS evolved it gradually absorbed all of these early radio projects into its own activities.

II. Founding of AFRS

At the conclusion of World War I, Raymond B. Fosdick, Chairman of the Commission on Training Camp Activities, suggested that in the case of a future war, the Army should develop, within itself, a morale agency.[10] He also suggested that it should establish a civilian morale committee to coordinate civilian and military projects. Provisions for the Army agency and the committee were written into the Army's 1939 *Mobilization Regulations*.[11]

In July 1940 the Army began to develop a rudimentary Morale Branch.[12] Perhaps the major guidance for the new activities came from E. Lyman Munson, Jr., a West Point Graduate and the son of the Army's World War I Morale Chief. The suggested civilian committee, the Joint Army-Navy Committee on Welfare and Recreation, was activated late in 1940.[13] In August 1941 Frederick Osborn, the chairman of this committee, was commissioned and appointed Chief of the expanding Army morale activities.[14] In January 1942 Osborn's unit was redesignated the Special Service Division.[15]

Osborn and Munson envisioned a greatly expanded program.[16] Immediately they began a search for especially qualified department heads. Thomas H. A. Lewis, a nationally prominent radio executive, was selected to develop and lead troop broadcast activities. He was commissioned on 26 May 1942,[17] the date that may be considered AFRS' birthday.

AFRS' mission[18] was to present radio to overseas troops. The broadcasts were to be the kind of radio the servicemen had known as civilians; but within that framework was to be a dissemination of informational materials that would facilitate an Allied victory.

III. Administration of AFRS

Lewis and his early staff members believed that it would be easier to accomplish their mission if program production headquarters were located in Los Angeles, California. Therefore, AFRS began as a part of the Special Service Division's Los Angeles motion picture production unit.[19] In the Fall of 1943

[8] (C. Courtenay Savage), *Progress Report*, 26 May 1942 to 1 December 1945, p. 45.

[9] Air Transport Command, 1469 AAF Base Unit, *Publicity Release*, 24 January 1945, 5 pp.; "The Voice of the Arctic," *Alaska Life*, pp. 48 ff.; November 1944.

[10] Francis Keppel to T. S. DeLay, Jr., Letter, 30 June 1950, p. 1.

[11] *Loc. cit.*; *WD Mobilization Regulations* 1-10, 12 June 1942.

[12] Russel O. Fudge, "Why? The Story of Information in the American Army," *The Armored Cavalry Journal*, 59:52, May-June, 1950.

[13] Francis Keppel to T. S. DeLay, Jr., *op. cit.*, p. 1.

[14] "Boss of Morale," *Time*, 38:40, 1 September 1941.

[15] Information Branch, *Dates Pertaining to Armed Forces Information and Education Division*, 20 September 1949.

[16] Frederick Osborn to T. S. DeLay, Jr., Letter, 4 April 1950, p. 1.

[17] Thomas H. A. Lewis, 19 June 1950.

[18] Frederick Osborn to T. S. DeLay, Jr., *op. cit.*, p. 1; Thomas H. A. Lewis, "Radio for the Army," *Writers' Congress*, 1944, pp. 167 ff.; Thomas H. A. Lewis, *Welcoming Address to the Army-Navy Committee Planning the Combined Operation of AFRS*, 9 October 1944, p. 1.

[19] Thomas H. A. Lewis, 18 October 1950; Los Angeles Branch Office, SSD, *Special Order No. 1*, 16 July 1942, p. 1.

the two activities were separated and AFRS developed its own administration.[20]

Nearly all of Lewis' staff members were brought directly into the organization from civilian life. None had had experience in operating a military organization. As a result the administration that developed was similar to that of a civilian advertising agency.

There were two major administrative instrumentalities: The Administrative Branch dealing with matters of personnel, security, training, and logistics; and the Operations Branch handling problems of program production, manufacture, and distribution. Lewis governed these branches like a corporation president. Two especially appointed advisory committees acted as the corporation's board of directors.

The name *Armed Forces Radio Service* was probably developed by the advisory committees.[21] It was in regular use by the late Fall of 1943[22] and became standard nomenclature for most of the American military radio activities throughout the world.

In November 1943 AFRS began to train personnel to operate overseas outlets.[23] Shortly thereafter a regular Army school was authorized at AFRS.[24] This school supplied much of the personnel for troop stations in the Pacific Theater of War as well as personnel for many other overseas service stations.

In the Fall of 1944 AFRS became a combined Army-Navy operation.[25] Thereafter the two services proportionately shared operating expenses, personnel needs, and program distribution. Also, the school trained personnel to operate Navy owned stations.

During the World War II period the government spent approximately $5,000,000.00[26] for AFRS' production activities in Los Angeles. This figure does not include governmental expenditures for electronic transmission and reception equipment, monetary allowances to members of the military, military "housekeeping" expenses, and transportation costs.

At the height of AFRS' operation, late Fall 1945, there were approximately 360[27] military and civilian persons on duty at the domestic offices of AFRS.

IV. Program Production Section

AFRS' first operational activity to develop was the Program Production Section. Originally, major emphasis was to be placed on especially produced soldier broadcasts. AFRS' first program, "The Mail Call," was recorded on 11 August 1942.[28] Soon other series were added to the weekly production schedule. Nearly all of the artists appearing on these shows donated their services.

The Bureau of Public Relations' and AFRS' duplicity of effort caused confusions in program production and program distribution. Lewis[29] believed that only one Army agency should produce shows for troops. After difficult negotia-

[20] DEML, Los Angeles Branch Office, SSD, *Morning Report*, 26 October 1943, p. 1; DEML, Los Angeles Branch Office, SSD, *Morning Report*, 5 November 1943, p. 1.

[21] Martin H. Work, 19 June 1950; Thomas H. A. Lewis, 18 October 1950.

[22] DEML, Armed Forces Radio Service, *Morning Report*, 23 December 1943, p. 1.

[23] WD, *Special Order No. 296*, 23 October 1943, p. 3.

[24] DEML, Armed Forces Radio Service, *Morning Report*, 1 April 1944, p. 1.

[25] Frederick Osborn, *Memorandum for Chief of Naval Personnel*, 14 October 1944, p. 1.

[26] Walter B. Henderson, 11 January 1951.

[27] This total obtained by the author from Army *Morning Reports*, The Navy *Daily Diary*, and Civilian Personnel *Monthly Reports*.

[28] Jean Kerr Cook, 6 April 1950; The "As Produced" script was found in the files of radio writers Lawrence and Lee.

[29] Thomas H. A. Lewis, 19 June 1950.

tions, high eschelon Army administrators ruled[30] that only AFRS would manage broadcast activities for troops in overseas areas. This was probably AFRS' most important policy definition. As a result Lewis' agency gained control of the "Command Performance" series in December 1942.[31]

As the Army's overseas stations developed Lewis found that it was necessary to furnish nearly all programing materials for these outlets. Therefore, the Domestic Rebroadcast Subsection was developed. This unit deleted commercial announcements and other inappropriate materials from domestic network programs. Then it made plans to reassemble usable materials into full length programs.

Late in 1943 a definite schedule of especially produced informational programs was planned.[32] These shows were arranged by AFRS' New York office as well as by the Troop Information Subsection of the Los Angeles Program Production Section.[33]

At the height of AFRS' operation, the late Fall of 1945, 17 hours of special shows and 43 hours of Domestic Rebroadcasts were being produced each week.[34] A relatively minor portion of these were troop information programs.

V. Technical Production Section

Nearly all AFRS programs were released by means of vinylite electrical transcriptions. Programs were first recorded; then transcriptions were manufactured. All recording and manufacturing processes were done by civilian agencies. The Technical Production Section managed AFRS relationships with these agencies. However, it was almost necessary to develop a completely new industry to handle AFRS' large orders. Difficulty was encountered in procuring raw materials and equipment for the manufacturing processes.

The Technical Production Section spent considerable energy on research for recording and transcription manufacturing techniques. Also, the section designed special electronic equipment for program transmission and reception, although electronic equipment was not actually procured by AFRS.

VI. Broadcast Distribution Section

AFRS transcriptions were originally distributed by the Office of War Information.[35] Since this method proved unsatisfactory, AFRS inaugurated its own distribution system on 1 July 1943.[36] For this plan, each week a designated group of transcribed programs were boxed together and shipped on a circuit of program outlets. The Broadcast Distribution Section was activated to manage this Unit Distribution System. The section also handled liaison between AFRS and its program outlets.

During the World War II period AFRS distributed approximately 2,097,000[37] transcriptions to its world-encircling outlets.

During World War II AFRS programs were distributed by at least 179 foreign

[30] (C. Courtenay Savage), *Progress Report,* 26 May 1952 to 1 December 1945, p. 11. (Also a resultant Atlantic Base Section *Command Circular No. 50,* 24 February 1943, 1 p.)

[31] E. M. Kirby to AFRS, Letter, 2 December 1942, p. 1.

[32] Florence Anderson Rickard, 7 April 1950.

[33] Erik Barnouw, "Radio Programs for Troop Education," *Educational Outlook,* 19:110, March 1945; AFRS, *Program List,* 1942 to 1946.

[34] AFRS, *Progress Report,* 1 July to 31 December 1945, 15 pp. (The totals were compiled from this source.)

[35] Radio Section (AFRS), *Memorandum of Production and Transcription Costs for Initial Program Schedule, n. d.* (pre 11 August 1942), p. 38; Irving L. Fogel, 7 July 1950.

[36] (C. Courtenay Savage), *Historical Notes,* November 1944, *n. p.*

[37] These figures were compiled from BDS Shipping Statistics Files and several AFRS *Progress Reports.*

commercial and/or government stations, 274 US service-owned and operated stations (AFRStations), and 392 known sound systems.[38] The latter group included 125 outlets at domestic service hospitals, a large wired sound system in London, many carrier current stations, and sound systems of vessels of the US Army and Navy.

VII. Shortwave Operations Section

As a major transmission medium AFRS planned to release shows over domestic short-wave stations controlled by the Office of War Information.[39] However, it became increasingly difficult to obtain regularly scheduled transmission of a quantity of AFRS shows.[40] Furthermore, the Office of War Information was producing propaganda-laden troop broadcasts.[41] Lewis did not believe that propaganda shows should be called troop broadcasts. With substantial assistance from a member of the US Congress,[42] Lewis obtained the desired transmission time and the Office of War Information ceased production of their troop broadcasts.[43] AFRS was given complete responsibility for programing during the allotted transmission time.

The Shortwave Operations Section was developed to manage AFRS' short-wave programing. News, sports, and special events were the most important shows. The programs were broadcast from the United States, received by the overseas outlets, and rebroadcast over their facilities. In this way the overseas listeners heard shows that were as timely as those heard within America. Also, domestic short-wave broadcasts were the only radio available to small groups of service listeners stationed in the isolated corners of the world.

At the height of AFRS' short-wave activity, the Summer of 1945, AFRS was broadcasting about 1750[44] hours of programing each month from domestic stations located on the East and West coasts of the United States.

VIII. Significance of AFRS

Conclusive evidence concerning AFRS' contribution to the World War II effort was not discovered. However, many American servicemen and high ranking military leaders[45] felt that the agency made a contribution of major significance. The American military services considered AFRS' wartime contribution sufficiently important to make the agency a permanent component of the peacetime Department of Defense.[46]

Probably a major influence on the American broadcasting industry was ex-

[38] These figures were compiled from information found in the many documents consulted for this study.

[39] J. Carter Hermann in Thomas H. A. Lewis, *JANC Radio Subcommittee 1944 Report*, 20 January 1944, p. 49.

[40] *Loc. cit.*

[41] *Hearing before the Subcommittee of the Committee on Appropriations, House of Representatives, Seventy-Eighth Congress, First Session, on the National War Agencies Appropriation Bill for 1944*, Part, I, 1944, p. 770; Thomas H. A. Lewis, 21 June 1950; E. M. Kirby and Jack W. Harris, *Star Spangled Radio*, 1948, p. 54.

[42] *Hearings before the Subcommittee of the Committee on Appropriations, United States Senate, Seventy-Eighth Congress, First Session on H. R. 2968*, 1943, p. 245.

[43] Frederick Osborn to Elmer Davis, Letter, *n. d.* (c. 15 August 1943), 2 pp.; Thomas H. A. Lewis, 21 June 1950.

[44] Information gathered from the file: J. Carter Hermann, *Monthly Reports of Shortwave Operations*, 1945.

[45] Quotations of Generals Mark W. Clark, Dwight D. Eisenhower, Donald H. Connolly, and Wm. C. Chase found in Thomas H. A. Lewis to Frederick Osborn, Telegram, 30 August 1945, p. 1.

[46] Paul G. Horgan to Martin H. Work, Letter, 23 November 1945, pp. 1 f.; T. J. O'Brien to Officer in Charge, Navy Unit, AFRS, Letter, 20 December 1945, p. 1.

erted through AFRS' use of edited, transcribed programs.[47, 48]

It is certain that at the height of its operation, AFRS had more network-like station affiliates than any other broadcasting system developed to that time. Furthermore, program signals from AFRS affiliates encircled the world. For the first time a radio voice achieved a world-wide, international audience. Because of this factor it seemed fair to temporarily allot AFRS a major place in the developmental history of broadcasting, speech's newest and most dynamic technique.

[47] In the post-war period nearly the entire American broadcasting industry adopted the edited, transcribed programing technique. This grew from the unusual success of the "Bing Crosby Show" in 1947.

[48] DeLay, Theodore S., Jr., "An Historical Study of the Armed Forces Radio Service to 1946," Unpublished Ph.D. Dissertation, The University of Southern California, Los Angeles.

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